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The National Board of Health* 1879-1883

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VERY few people in the United States, even among that group most actively engaged in national public health affairs, realize that the United States once had a National Board of Health.

It is a dramatic story, and, like all dramas, has its heroes, struggling against overwhelming odds; its villain, who possesses the intelligence and aptitudes that all villains are supposed to exhibit; its comedy; its periods of calm which usually preceded another stormy outburst; its climax, anti-climax, and finale.

The idea of unified, correlated national health services had been germinating slowly since the epidemic of yellow fever in 1793. Three National Sanitary Conventions had been held from 1857 to 1860, and the question of a nation-wide quarantine service was discussed at these meetings. At the first meeting of the American Public Health Association in 1872, Dr. C. C. Cox, Health Officer of Washington, D. C., gave an excellent discourse on the necessity for a national health organization and outlined its functions and a suitable organization. State Boards of Health were being organized in rapid succession. In 1874 the National Association of State Health Commissioners was formed, and the obvious need for a central federal health agency became more and more apparent.

A meeting attended by representatives of many state and city health departments was held in Washington in 1875 to discuss plans for a federal health organization, but this convention met with little success. The three existing national government departments that already possessed medical officers—namely, the Army, the Navy, and the Marine Hospital Service—flew into a jealous dispute as to which should be most prominent in the new organization; and the meeting closed in dissention. Dorman B. Eaton, the distinguished lawyer who had drafted the pioneer Metropolitan Board of Health

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Act of New York in 1867, and also had drawn the act for the New York State Board of Health, was asked to prepare a draft of a bill which would create a National Board of Health. He did so, placing the medical departments of the Army, Navy, and Marine Hospital Service on the same footing. This proved fatal. Both the Army and the Marine Hospital Service rejected the bill and each at once endeavored to secure legislation from Congress which would make its service more prominent in national sanitary work.

The yellow fever epidemic of 1878 precipitated the issue. This devastating outbreak swept up the Mississippi Valley from New Orleans, causing great loss of life and paralyzing industry. The Valley states realized that the invasion came to them from the river, and blamed the Louisiana authorities for lax sanitary administration. They felt that their only hope against future disaster lay in a coördinated health service under national auspices.

In April, 1878, Dr. J. M. Woodworth of the Marine Hospital Service succeeded in getting a bill through Congress which conferred quarantining powers on his department, but he was given no appropriation to carry out the objects of his bill.

When Congress convened in 1879, the sentiment of the public was unmistakable. There must be no repetition of the disaster of 1878. The Army and the Marine Hospital Service both sponsored bills relating to a National Health Department. Dr. Stephen Smith thought that Dr. Woodworth's bill was the only one that could pass, and thus he sponsored it. But the act that Congress finally accepted in March, 1879, was sponsored by the American Public Health Association and drawn by Mr. Eaton. It transferred from the Marine Hospital Service all the health duties and powers hitherto conferred upon it, including all maritime quarantine. Surgeon General Woodworth, a fine, sincere, talented man, had worked very hard for his bill and sincerely believed it was the best that had been proposed on national health legislation. Upon its failure, he collapsed, and within a few days he was dead.

The new act created a National Board of Health, consisting of seven physicians, no two from any one state, and a representative from the Army, the Navy, the Marine Hospital Service, and the Department of Justice. The members were appointed by the President and had the following duties:

1. To obtain information on all matters affecting the public health.
2. To advise governmental departments, the commissioners of the District of Columbia, and the executives of the several states on all questions submitted by them—or whenever in the opinion of the Board such advice may tend to the preservation and improvement of the public health.
3. Report to Congress a plan for a national health organization, special attention being given to quarantine and especially regulations to be established between the states, as well as a national quarantine system.

The following men were appointed to membership on the Board, and $50,000 was appropriated for this work:

J. L. Cabell, J. S. Billings, T. J. Turner, P. H. Bailhache, S. M. Bemiss, H. I. Bowditch, R. W. Mitchell, Stephen Smith, S. F. Phillips, and T. S. Verdi.

The Board was an excellent one. Dr. Cabell, professor at the University of Virginia, was one of the most distinguished physicians of his day; Stephen Smith had done more to advance the public health than any man in the nation. Henry I. Bowditch, the Boston representative, was the pioneer in state health work in New England; J. S. Billings was to become the foremost physician of the land.

On June 2, 1879, Congress passed a second act, giving the new Board wide quarantine powers, and appropriated

$500,000 for its quarantine work. This act had one clause which proved to be a fatal weakness: It gave these quarantine powers for a period of four years only, and a reënactment bill was necessary for a continuation of the work.

The National Board started its work most auspiciously. Eight quarantine inspectors were employed, covering the coast from Maine to the Rio Grande. Familiar names appear: Elisha Harris was assigned the coast from Portland to New York; A. N. Bell was given Norfolk to Brunswick, Ga., and Jerome Cochran, from Key West to Pensacola. In theory, the National Board aided states in enforcing their quarantine regulations, but in practice, since the National Board had the funds, it dictated the quarantine policies. From January 12 to June 30, 1880, the Board spent $284,000, and during the next fiscal year, $202,000 was expended for hospital construction and quarantine purposes. It sent a yellow fever commission to study conditions in Cuba, with Dr. Chaille of New Orleans as Chairman and Dr. Sternberg as Secretary. The Board members themselves were very active on a variety of sanitary matters and published some excellent reports.

But serious trouble was not far off. Dr. Joseph Jones was secretary of the Louisiana Board of Health. He was a man of tremendous energy and strong opinions. He had been an officer in the Confederate Army, and was an indomitable foe to anyone who did not agree with his ideas. Although he had lost the Civil War, he had not lost his belief in States' Rights. He wrote Dr. Cabell in the summer of 1880:

"The Board of Health of the State of Louisiana cannot delegate its quarantine powers to any other organization, whether created by a National Congress or by other individual States." *

* National Board of Health, "Reports" 1880, page 605.

Shortly thereafter an epidemic broke out in the delta below New Orleans. Sternberg visited the zone and made the diagnosis of yellow fever. Samuel Bemiss, the member of the National Board who lived in New Orleans, wrote Dr. Jones the facts in a rather superior manner, stating that the National Board could be drawn upon for necessary funds for disinfectants, sanitary inspections, and for necessary equipment in order to control the epidemic. He stated just how funds were to be allotted and indicated that approval of all expenditures must, of course, be in his hands. This statement has a familiar sound to present-day health departments that receive federal grants-in-aid, but most modern state health officers are not so conscious of the principle of state sovereignty as was Dr. Jones. Dr. Jones responded that the Louisiana Board of Health had investigated the "*malaria fever*" of the rice lands and that necessary health measures had been taken, thus putting young Sternberg in his place. Sternberg made a second visit and again made a diagnosis of yellow fever. A neutral commission was then selected to study the matter. Dr. Mitchell, the Board member from Memphis, and Sternberg went along. The commission decided that the epidemic was malaria,* and Dr. Jones won the first round.

On July 15, 1880, a vessel called the "Excelsior" came to New Orleans with a cargo of coffee. Five days later one of her crew developed yellow fever. She had been held in quarantine a few days in the lower delta, and it is possible that her crew was infected from the cases diagnosed as yellow fever by Sternberg. Meanwhile, the coffee had been sent to a number of interior cities.

* From the description of the cases, Sternberg may have been wrong. It is more probable that there were cases of both yellow fever and malaria at the same time. Diagnosis was purely symptomatic and very difficult.

Dr. Bemiss, National Board member in New Orleans, telegraphed the facts to the health officials of these various cities. This was an unprecedented thing to do and was an interference with commerce. Dr. Bemiss writes:

"A great deal of excited discussion arose in consequence of this action of the National Board in relation to the cargo of the 'Excelsior.'"

The upper Mississippi Valley states had no confidence in the Louisiana quarantine service and stood by the National Board in this controversy. But apparently Dr. Jones was more than a match for Bemiss. He stung like a hornet, for he was never satisfied with one encounter, but always returned to the attack.

In 1881, the National Board appointed as its inspector a worthy opponent for Dr. Jones in Dr. S. E. Chaille. He had been a famous Confederate War officer, was a professor in the Medical College, and perhaps the most beloved physician of Louisiana. His appointment appealed to local sentiment and was a very wise move on the part of the National Board of Health. But trouble began for Dr. Chaille almost at once. To forestall any outbreak and to be prepared for emergencies, before the yellow fever season began he asked the Louisiana Board of Health for the right to station his inspector down the river at the state quarantine, and also asked to have access to the New Orleans death reports. The Louisiana Board of Health were indignant, and felt that they had been grossly insulted. They would have no federal "spies" in their midst. But the New Orleans Auxiliary Sanitary Association—a group of business men—supported Dr. Chaille. One suspects they did so because of the threat of embargo from the Sanitary Council of the Mississippi Valley, which had insisted upon federal supervision of the Louisiana quarantine officers. Dr. Cabell wrote from Washington directly to the Governor of Louisiana requesting his coöperation. The Governor supported the National Board of Health, and Dr. Jones lost the second round.

His own letters testify that he did everything in his power to make life miserable for Dr. Patton, the federal inspector who was stationed at quarantine.*

The year 1882 was the most active and productive of the National Board of Health. The report of the year is a book nearly six inches thick devoted to various sanitary investigations that were carried out by members of the Board, or that were authorized by the Board. Many of these studies are basic, well planned, and efficiently executed. But the gadfly at New Orleans was more tormenting than ever before. All states, says the report rather plaintively, are willing to coöperate with the National Board except Louisiana.

On May 1, before the yellow fever season began, Dr. Chaille wrote the new Governor of Louisiana asking if the National Board inspector could again be stationed at state quarantine. The Governor replied in the affirmative, stating:

"The inspector is expected, in accordance with the original authorization of Congress, to aid and assist our state quarantine officer. It must be understood that he shall not supervise, control or direct the actions of the state quarantine officer."

Dr. Patton was again assigned to quarantine by Dr. Chaille, but Dr. Jones kept up a continual battle against what he considered the effrontery of the federal government in invading his state and attempting to supervise his work.

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* See Dr. Chaille's defense of Dr. Patton in letter to Dr. Jones, Sept. 5, 1881, p. 339 of *Reports of National Board of Health*. See also Vol. III, compiled works of Dr. Jones.

Dr. Chaille wrote at the end of the summer:

"I shall hope never again to occupy such unpleasant and detrimental circumstances as my office has brought me during the past two years."

When Congress was considering the appropriation for the National Board that summer, the New Orleans press accused the Board of "manufacturing yellow fever in the Mississippi Valley" to frighten the national legislative body to give it more funds and continue its work. A telegram from the National Board Secretary, Dr. Turner, was misquoted by one of the New Orleans papers to say that if the National Board was not supported, it would be necessary for the upper Valley states to resort to the "trusty shotgun" for the purpose of enforcing quarantine against yellow fever. The Louisiana State Board of Health flew into a rage and passed the following resolution:

WHEREAS: the National Board of Health by the emission of such innuendos and incendiary publications violates the conventionalities of official intercourse in a gross and unwarrantable manner, showing what it would do if it once had the power, and reflecting most aristocratically upon the self governing power of the American people — —

BE IT RESOLVED, that the telegram of Secretary Turner be copied and forwarded to President Cabell, with the request that in the future their communications be couched in more decorous language when alluding to this Board.

Few of the friends of the National Board seem to have realized that while the controversy in New Orleans was raging, a much more dangerous foe within the shadow of the National Capital was quietly plotting its destruction. When Surgeon General Woodworth died, a young Marine Hospital Service officer, John Hamilton, was appointed to the position. His rise in the Service had been phenomenal. He had taken no part in the advancement of public health in the nation and was not even a member of the American Public Health Association. He had no knowledge or experience in the field of quarantine, nor, in fact, had he any knowledge or experience in the fields of sanitation and public health. He was forceful and intelligent, and must have been an expert in political intrigue. He knew that if Congress did not reenact the quarantine law by June 2, 1883, the National Board of Health must terminate. Since the bill of April, 1878, had granted quarantine powers to the Marine Hospital Service, these functions would revert to him and to the Marine Hospital Service if the National Board of Health was discontinued.

Quietly and effectively he did his utmost to bring discredit upon the National Board of Health and its activities. He accused the members of the Board of misuse of funds, of extravagance, and incompetence. He insinuated that leading sanitarians, such as Rauch, Kedzie, Elisha Harris, and Wirt had used funds of the Board to corrupt local health officers, and claimed that they had packed the Indianapolis meeting of the American Medical Association in securing endorsement of the National Board.

Congress gave consideration to extension of the activities of the National Board of Health in 1884. Colonel George Waring, Secretary of the Board in 1884, in his remarks before the Committee of Public Health of the House of Representatives, stated:

"In Dr. Hamilton I knew was centered the only effective opposition to the National Board of Health. I accused him of misrepresentation to lash him into appearance before this Committee rather than, as has been his practice hitherto, 'at the button hole.'"

Waring pointed out that Hamilton's quarantine work (in the Brownsville epidemic) "has been injudicious and unskilled," and insisted that the Marine

Hospital Service had no facilities at all except curative ones, and was engaged in one specific duty: the cure of sick sailors.

The defenders of the National Board of Health were good sanitarians but poor politicians. It was true that the members of the Board had been overzealous; they had tried to move too rapidly, and in this sense they had been extravagant. They had made the fatal mistake of encroaching on the prerogatives of the individual states, and the representatives of these states in the Congress did not relish this taste of federal centralization of power. There had been no more widespread epidemics, and memory of past disaster is notoriously short. The real statesman profits by past experience and plans for the long future, but not the politician.

Despite the support of the American Public Health Association, the Sanitary Association of the Mississippi Valley, the State Departments of Health of Massachusetts, New York, Illinois, Michigan, and many others, the reenactment bill of June 2, 1883, failed to pass. A small grant of $10,000 was given the National Board to continue its investigations and advisory functions, but all its quarantine powers reverted to the Marine Hospital Service.

Stephen Smith, of all the national sanitarians, saw the importance of a *National Public Health Service.* He had favored Woodworth's bill in 1879. He was cited by Hamilton in 1883 as favoring transfer of the National Board's powers to the Marine Hospital service; but Smith, in his address before the Public Health Committee of the House of Representatives in 1883, makes his stand clear. He wished to confer all public health duties and powers on the National Board of Health, but to incorporate in the National Board the officers, the staff, and the activities of the Marine Hospital Service. He foresaw that Congress would lose interest in the National Board of Health, but would continue to support a service agency that had full-time career officers and was incorporated as an integral part of national government machinery.

In retrospect we realize that Stephen Smith was right. The unwieldy board of experts, each living in a different community and attempting to carry out administrative duties, with no cohesion, no real unity of opinion and no central authority, was an impossible administrative machine. A centrally guided service, such as actually developed, had unity and purpose, but unfortunately lacked intelligent leadership. The public health policies for a great nation for many years were determined solely by the opinions—sometimes the whims and personal prejudices—of a single individual. It would have been a much better plan if Dr. Stephen Smith's half formulated plan of 1883 could have been carried out, thus salvaging the really important features of the National Board of Health and incorporating in it a service agency with full-time personnel, an *esprit de corps,* and a strong central administrative machine. The members of the Board of Health, selected by the President of the United States because they were public health experts, should have been continued as a Board of Health and should have served as a permanent policy-forming body, advising and aiding their administrative officer. The Marine Hospital Service was the most logical existing national agency with which to vest this national public health function. The Surgeon General should have been made the executive officer of the Board, and all actual administrative responsibility should have been centered in him. It was a great opportunity to have organized a close-knit, effective National Health Service, but there was no single man who had the vision or the power to solve this simple problem.

The Preventive Medicine Program of the United States Army*

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THE Medical Department of the Army is responsible for the health of all our military personnel. Its principal mission is to keep the soldier fit to fight. A complex organization is required to accomplish this mission, and at present the Medical Department includes the following important branches: The Medical Corps, Dental Corps, Veterinary Corps, Nurse Corps, Sanitary Corps, Medical Administrative Corps, the Physical Therapy Aides, and the Dietitians.

Obviously the services rendered by the Medical Department are manifold. This organization is intimately concerned with the health and welfare of the soldier from the moment of his induction until he leaves the service. It establishes and maintains the physical standards used in the selection of all Army personnel, and it examines every soldier inducted. It is concerned with seeing that he is provided with satisfactory shelter, that he is fed an adequate, well balanced diet, and that he takes the proper physical exercise. It is concerned with his habits and hygiene, with the sanitation of his environment, his immunization, and with the innumerable other measures required to protect him against disease. If he becomes ill or injured the soldier receives excellent medical attention in a modern army hospital, and when he eventually leaves the service he is given a final physical examination by the Medical Department.

The most glamorous of these activities in time of war is the medical and surgical care of the sick and wounded. The life of a medical officer assigned to duty in an active theater of operations is packed with drama intense enough to satisfy the most romantic cravings for adventure. The devotion to duty of the officers of the Medical Department has always been a credit to our profession. Their heroic achievement—in the evacuation and care of the wounded, in salvaging the human wreckage of battle, in snatching the gravely injured from the brink of death, and in returning the wounded to active duty—constitutes a thrilling epic of war. It affords a satisfying contrast to the necessary but unpleasant task of destruction that is basic to all war.

There is, however, another aspect of military medicine that is less dramatic but equally important. It is to this, the preventive aspect, that attention is invited. To keep at all times the maximum number of men in condition to perform their military duties requires that these men be protected from the numerous hazards with which they are surrounded, hazards which if not controlled may so seriously deplete man

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power as to render military operations ineffective or impossible. Lord Disraeli, that shrewd and farsighted statesman of the Victorian era, has been quoted as stating that "the prime function of government is the protection of the health of its people." A civil population that is not healthy cannot be prosperous and will lag behind in the economic competition between nations. This is even more true of a military population, for any army that has its strength sapped by disease is in no condition to withstand the attack of a virile force that has conserved its strength and is enjoying the vigor and exhilaration of health.

History is replete with dramatic examples of the influence of disease in shaping the course of battles and campaigns. From the days of ancient Greece and Rome to the present time epidemics have played a vital rôle in determining the outcome of military operations. The world has never seen, and probably will never see, the military genius who can ignore this important factor. Alexander felt the withering blight of disease. Hannibal was cheated of his conquests by illness in his Army. More than one of the crusades of the Middle Ages were turned back by the ravages of infection rather than the arrows of the Saracens. Napoleon, in his retreat from Moscow, felt the sting of disease and the crippling effects of physical deterioration. The last world war was prolonged in several theaters by the paralyzing action of disease. In Macedonia, malaria immobilized large British, French, and German forces for about three years. Eighty per cent of 120,000 French troops were hospitalized; and among the British with a strength of 124,000 there were 162,000 admissions for malaria between 1916 and 1918.

We may admire the technological advances that have produced the powerful weapons of today, but there is one factor which has not changed since the day of the crossbow and the sword. That factor is the need for man power with which to operate these modern instruments of destruction. Therefore, this World War presents no exception to the generalization that the protection of the health of troops is an essential part of any well planned military operation. The nature and extent of our current operations are such that never before has it been so necessary to guard our soldiers against disease. The destructive power of modern weapons and the mobility of troops is now so great that a military force, disabled by disease, is relatively more defenseless than ever before, when confronted by a healthy opponent. Moreover, the wide geographic distribution of our present operations has introduced many new health hazards. American soldiers are scattered around the globe. Literally they are spread from Greenland's icy mountains to India's coral strand.

Today we are faced with the danger of operating in tropical areas that present some of the most difficult health problems that ever confronted a military force. Even under conditions of peace, life in the tropics has usually been attended by greater health hazards than life in the temperate zones. The backward civilizations encountered in many of these hot climates testify to the debilitating effects of the local diseases. Poor sanitation is the rule—poor sanitation that exerts an obviously bad effect on the native populations and is even more dangerous to the incautious visitor. In such places the enteric and the insect-borne diseases are usually prevalent. Often they are so common that it is exceptional to find an uninfected native. Diseases that are medical curiosities in this country are matters of everyday occurrence. Even the tropical climate itself, with its high heat and humidity, constitutes a menace—one that the native has learned to

reduce by living a leisurely and ordered life, such as is not possible under military conditions.

We must remember, however, that the disease hazards of this war are by no means limited to the tropics. The present conflict is truly global and the military action extends from the equator to the Arctic circle. Wherever American troops are stationed they are exposed to dangers of infection incident to their physical and social environment. These are encountered first at home during the period of training and they are accentuated later in the overseas theaters. Military preventive medicine has as its main task the control of these hazards in order that man power may not be wasted through avoidable illness or death.

Obviously, this huge task of health protection is a responsibility shared by all Medical Department officers wherever they may be stationed. The medical officers assigned to duty with troops in the field constitute our first line of defense against disease. To this field personnel will always fall the task of putting into action such measures as are found to be most effective. The planning and the correlation of these activities are the function of the Preventive Medicine Division of The Surgeon General's Office. It is to this phase of the preventive program that this discussion relates.

THE PREVENTIVE MEDICINE DIVISION

During 1939, when the clouds of war began to gather, it became obvious that this country might ultimately become embroiled in a world conflict. The Surgeon General of the Army devoted increasing attention to plans for protecting the health of our troops under conditions of mobilization and war. From a small and rather informal beginning there evolved in his office during 1941 a special Preventive Medicine Division. This division has developed into an organization which today covers a wide variety of fields all concerned with disease prevention.

The objectives of the division have been the maintenance and conservation of the health of the Army through the prevention and control of infectious diseases and the elimination of sanitary, occupational, and other health hazards. It has advanced toward this objective by the development of plans based on estimates of future possibilities, by the constant accumulation of scientific knowledge from all available sources, and by the vigorous application of the most promising control procedures. In this work the division has utilized every available facility and has enlisted the services of many highly qualified persons. In general the nature of the work is the administrative management of all phases of preventive medicine. This division is concerned with the following activities: the establishment of policies and procedures; the development of control measures; the procurement and assignment of specialized personnel; the collection, analysis and distribution of information on medical and sanitary conditions in all parts of the world; and the initiation of research on problems of immediate significance to the Armed Forces. It has maintained close liaison with numerous governmental and civilian agencies. These include the National Research Council, the Committee on Medical Research of the Office of Scientific Research and Development, the Bureau of Medicine and Surgery of the Navy, the U. S. Public Health Service, the Pan American Sanitary Bureau, the Office of Coördinator of Inter-American Affairs, the International Health Division of The Rockefeller Foundation, and most of the scientific societies in the fields of biology, medicine, and public health. Association with all of these agencies has been extensive and intimate.

The Preventive Medicine Division now includes the following branches: Sanitation, Sanitary Engineering, Epidemiology, Laboratories, Military Occupational Hygiene, Venereal Disease Control, and Medical Intelligence.

The Sanitation Branch—The Sanitation Branch is of great importance. Sanitation has long been recognized as the backbone of preventive medicine. In civil life it is accepted as a commonplace and inevitable attribute of civilization. Thus we often fail to appreciate how much our physical well-being depends on the routine performance of the homely functions of sanitation. Its adaptation to the conditions of military life, especially to operations in the field, involves highly specialized technics, although the underlying principles remain the same. Neglect of sanitation almost inevitably results in outbreaks of preventable diseases. Obviously, therefore, it is essential to maximum military effectiveness.

The foundation of sanitation is cleanliness. It is logical therefore that, in the Sanitation Branch, much attention has been devoted to the study, development, and promotion of measures which will provide for the soldier a clean healthful environment. The officers of this branch maintain close contact with conditions in the field through the careful analysis of the routine and special sanitary reports which are received from all military organizations at least once each month. This affords an excellent opportunity to assist the medical officers of the various organizations in the solution of their sanitary problems. The branch is also concerned with the formulation of general policies on sanitation and hygiene. Liaison is maintained with the Quartermaster, the Engineers, and various other branches concerned with food and water supplies, sewage and other waste disposal, housing, ventilation, clothing, and insect control; also with numerous other agencies engaged in the development of more effective sanitary methods.

The best of food can easily become a vehicle for disease if it is contaminated through improper handling. The sanitation of food handling is therefore a matter of great concern to this branch. Those of you who are familiar with the difficulties of food sanitation in the permanent installations of civil life will appreciate the infinitely greater obstacles to be overcome in dealing with this complex problem under field conditions in the Army, especially in the combat zone. However, these obstacles must be overcome, for in any military force the slightest relaxation of sanitary discipline may produce enteric infections severe enough to immobilize the entire force.

The sanitation of water, which is intimately related to food sanitation, is also a major responsibility of this branch. All recognize the important rôle of water as a vector of enteric diseases; but few, who have not seen the conditions under which many of our troops are living abroad, can appreciate the degree to which the water supplies of those areas may be polluted with human excrement. The Sanitation Branch is concerned with the purification of such water under the most trying field conditions. Obviously this requires technics entirely different from those employed in civil life or in fixed military installations. These technics must be so simple that they can be performed by the average soldier; the equipment must be easily portable so that it can be carried under conditions of combat; and the procedures must be so effective as to decontaminate, and render safe, water from sources that would be rejected under the normal conditions of civil life. This branch is also concerned with the development of policies and methods which will insure the sanitary disposal of sewage and other wastes.

Closely allied with the sanitation of water, food, and wastes, are the problems connected with the control of the horde of insects that are present in many areas. As a rule flies are only a nuisance in our modern cities. On the other hand, they may constitute a serious menace to health in areas where sanitation is primitive or neglected.

Many of the biting insects carry serious diseases and therefore their eradication or control is of the greatest importance. For this reason the Sanitation Branch is concerned with the development of measures that will protect troops against mites, ticks, lice, bedbugs, fleas, mosquitoes, sandflies, and various other kinds of gnats and biting flies. Another important function is the control of the rodent reservoirs of disease. The measures used are quite varied, depending on whether the troops are living in permanent camps or in the field. In the vicinity of fixed installations they include extensive insect and rodent control projects. Under field conditions reliance must be placed on the personal protection of troops through the use of our highly effective new repellents and insecticides.

Sanitary activities on Army posts in the continental United States are supplemented by work done outside this area by civilian health agencies. Early in 1940 The Surgeon General of the Army made arrangements whereby the U. S. Public Health Service, working through state and local agencies, has provided for extra-military sanitation in civilian areas around all Army reservations. This activity has been coördinated through the assignment of U. S. Public Health Service officers to the headquarters of each Service Command for coöperation with the Army Surgeon.

The Sanitary Engineering Branch—The Sanitary Engineering Branch deals with the engineering aspects of sanitation. The officers assigned to this branch are concerned with the sanitary control of the large water purification plants and sewage disposal plants of permanent camps, posts, and stations. The Corps of Engineers is responsible for the actual construction and operation of these facilities, but the sanitary engineer is concerned with such supervision and advice as may be necessary to protect health. This arrangement may appear to be complicated. However, the situation is a counterpart of the civil arrangement whereby the construction and maintenance of city water supply and sewage disposal systems are handled by the city engineer or by a special board, while the board of health advises concerning sanitary aspects that may affect the health of the community.

The officers of this branch have initiated surveys of practically all the water supplies and the sewage plants serving Army posts in this country. They have found many defects and have collaborated with the Corps of Engineers in their correction. They are also concerned with the sanitary facilities in the large hotels and other dormitories which have been taken over by the Army and with special methods for safeguarding military water supplies from sabotage.

Another important function is close collaboration with the Corps of Engineers in the initiation and planning of insect and rodent control programs for posts in the Zone of the Interior. During the last two years more than 400 sanitary engineers and 140 entomologists have been commissioned and assigned to key positions throughout the Army. In 1941 the Army's mosquito control program in the United States cost about 2 million dollars, and the malaria rate was 1.8 per 1,000. In 1942 the cost was 3 million dollars and the malaria rate only 0.6 per 1,000. This was the lowest rate ever recorded

for the Army. This campaign was supplemented by the extramilitary mosquito work of the U. S. Public Health Service.

The Laboratories Branch—The Laboratories Branch is concerned with the formulation and the accomplishment of policies and activities designed to provide, maintain, and improve the various types of medical laboratory services required for the Army. Diagnostic laboratory services are made available for all Army hospitals; and laboratories for epidemiological, sanitary, and research work are also provided for the prevention of disease both at home and abroad. The quality of the services afforded by both types of laboratories depends on the adequacy of trained personnel, quarters, equipment and supplies, and the use of suitable technical methods. Earlier there was some difficulty in obtaining sufficient numbers of physicians trained in bacteriology and the other laboratory specialties. This problem has been solved in part by the utilization of non-medical specialists who are commissioned in the Sanitary Corps and assigned to work in laboratories under the supervision of Medical Corps officers. The Laboratories Branch has been of great assistance to the health program of the Army by providing an effective laboratory service.

The Military Occupational Hygiene Branch — The Occupational Hygiene Branch has been established since the beginning of the present emergency in order to safeguard the health of civilian workers in the essential war industries owned and operated by the Army. These workers who are manufacturing the weapons of war are just as essential to the war effort as are the soldiers who use the weapons. The soldier temporarily incapacitated by measles or a bayonet thrust, represents a loss to the war effort. So also the munitions worker who is absent from his or her work bench or the assembly line, because of typhoid fever or smallpox, represents an inexcusable delay in the output of the essential instruments with which the war must be won. The protection of the health of these workers is therefore as much a matter of concern to the Army as is the health of the soldier.

This branch, working through Service Command Surgeons, supervises the emergency medical service in Army operated industrial plants and depots. It is also concerned with the hygiene of working conditions and the elimination of occupational health hazards. It maintains a central industrial hygiene laboratory which makes surveys of all our military industrial plants in order to improve the health of the workers. This branch has also been concerned with the procurement and assignment of experienced industrial medical officers.

Another important activity which has been developed under this branch is the organization at Fort Knox of the Armored Force Medical Research Laboratory. This laboratory has been established for the purpose of studying the hazards intrinsic in the operation of tanks and other mechanized warfare vehicles. These hazards include exposure to toxic gases, heat, dust, and trauma in tanks. Much valuable information concerning the operational dangers of mechanized warfare is being afforded by the studies made in this laboratory.

The Occupational Hygiene Branch maintains liaison with all other governmental and civilian agencies concerned with industrial hygiene. It has also assumed responsibility for the supervision of industrial health and environmental sanitation in certain contractor-operated plants located on War Department property. These plants are surveyed by the Industrial Hygiene Division of the National Institute of Health, with which close contact is maintained. It is estimated that the

Army's Occupational Hygiene Branch is concerned with preserving the health of more than 1½ million civilian employees in the Army operated plants alone.

The Epidemiology Branch—The Epidemiology Branch is responsible for the formulation of general policies concerning the control of infectious diseases. Its officers assemble and analyze data on the current prevalence of disease among troops, and investigate any abnormal incidence of infection. This branch keeps its fingers on the pulse of the Army, and is ever watchful to detect the first signs of danger from communicable diseases, in order that it may advise the local medical officers as to the measures required for control. It includes several sections, one of which is concerned primarily with the administrative and technical supervision of the Army's immunization program.

Early in 1940 The Surgeon General began to expand this immunization program in order to meet the new disease conditions of war. It now includes the following important procedures: All troops are vaccinated and revaccinated against smallpox, typhoid fever, and the para-typhoid fevers A and B. They are also immunized actively against tetanus, using a series of injections of liquid tetanus toxoid. This new measure is considered to be of the greatest value in the protection of the wounded. An effective vaccine against yellow fever has been made available and the Army has used this material to protect all of its troops in areas where yellow fever exists. Promising vaccines against typhus fever are now available and in use among troops going to regions where louse-borne epidemics of this disease are apt to occur. Provisions have also been made to use cholera and plague vaccines in the attempt to immunize individuals going to regions where these diseases are endemic. The exact degree of protection afforded by these typhus, cholera, and plague vaccines is not known, and therefore the Army does not rely on the use of vaccines alone, but insists on the additional use of all indicated sanitary procedures. This section also assists in planning for the procurement, supply, and distribution of all the prophylactic biologicals used by American troops throughout the world. The present immunization program is considered one of the most potent weapons being used for the preservation of the health of the Army. Undoubtedly many thousands of American soldiers will owe their lives to the protection afforded by these immunizing agents.

Another important section is the one devoted to the control of tropical diseases. Since the Spanish American War, the Army has had a rich experience with such diseases in the tropical possessions which were acquired at that time from Spain. Consequently, medical officers of the regular army have made important contributions to our knowledge of tropical medicine. As we passed from the recent period of emergency into the present state of war, American troops were sent to many new tropical frontiers, first in the western hemisphere and later throughout the world. This introduced new and difficult problems in disease control.

The most important tropical disease to which United States troops will be exposed is malaria, which is the most widespread disabling disease in the world. Other insect-borne diseases are potentially dangerous and so are the intestinal infections, especially cholera, the dysenteries, and the diarrheas. The tropical disease section has exerted leadership in planning an effective military program for the control of such diseases. This program includes the organization of special teams of highly trained control officers for duty in overseas theaters, the initiation of extensive programs for the training of medical

officers and of civilian teachers in tropical medicine, the maintenance of liaison with those responsible for the procurement of the special personnel, equipment and supplies needed, and coöperation with the research agencies concerned in the development of new procedures for the control of tropical infections among troops. The infection rates in certain overseas regions where protection is difficult are relatively high. However, in spite of the exaggerations of certain sensational writers, both lay and medical, a relatively effective program of disease control has been provided for all such areas.

The Civilian Board for the Control of Epidemics—One of the most effective agencies developed as a part of the Army's preventive medicine program, is the "Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army." This board which was established by the Secretary of War in January, 1941, on the recommendation of The Surgeon General, is an example of the effective collaboration which has existed between the Preventive Medicine Division of the Army and the leading civilian specialists of the country.

The board operates as a part of the Preventive Medicine Division under the immediate supervision of the Assistant Director, Colonel S. Bayne-Jones. The central body of the board consists of the following seven members: Dr. Francis G. Blake, President, Drs. Oswald T. Avery, Alphonse R. Dochez, Ernest W. Goodpasture, Kenneth F. Maxcy, O. H. Perry Pepper and Andrew J. Warren. In addition there are 104 members of commissions, making a total of 111 civilian specialists in infectious diseases who are attached through the board to the Office of The Surgeon General. All of these members hold appointments as special consultants to the Secretary of War.

The broad objectives of the board are two-fold. Primarily its function is to act as an advisory body to The Surgeon General and to be ready at any time for temporary duty in the field in order to combat epidemics or threatened epidemics. Its other function is to conduct continuing investigations, either in the field or in civil institutions, on practical problems of military preventive medicine. The Surgeon General has repeatedly called on the board or groups of its members for advice and assistance. In addition to projects for investigation, approved in advance, numerous emergency field studies have been made by members of the board and its commissions at the request of the surgeons of Service Commands or of Posts in various parts of the Army. The arrangements for these field investigations have such flexibility that it is possible at times to place consultants in the field or to have them on their way to posts within a few hours after requests for assistance have been received and approved. At present ten commissions are organized under the board. These are as follows: (1) The Commission on Acute Respiratory Diseases, of which Dr. John Dingle is the Director. This group is now stationed permanently at Fort Bragg, N. C. (2) The Commission on Cross Infections in Hospitals, under Dr. Oswald H. Robertson. This group is concerned with the study of various methods for reducing the number of pathogenic bacteria and viruses in the air of hospitals and barracks. (3) The Commission on Epidemiological Survey was formerly under Dr. S. Bayne-Jones and is now under Dr. Francis G. Blake. It has been concerned with continuing bacteriological surveys among troops in various parts of the country, in order to establish base lines during inter-epidemic periods for comparison with the prevalence of types of bacteria in periods of outbreaks of respiratory diseases. It is hoped that useful predic-

tions may be made in advance, on the basis of changes in prevalence of such organisms as streptococci, influenza bacilli, or meningococci, and that the information gained may be applied promptly to the control of epidemic diseases. (4) The Commission on Hemolytic Streptococcus Infections, formerly under Dr. M. Henry Dawson, now under Dr. Chester S. Keefer, is concerned with the control of streptococcal infections of the respiratory tract. (5) The Commission on Influenza, under the directorship of Dr. Thomas Francis, Jr., is organized to assist in dealing with influenza on a country-wide scale in Army posts if an epidemic should occur. (6) The Commission on Measles and Mumps under Dr. Joseph Stokes, Jr., is concerned with problems of the epidemiology, prevention, control, and treatment of these diseases. (7) The Commission on Meningococcal Meningitis, formerly under Dr. Perrin H. Long, and now under Dr. John Phair, is concerned with the development of effective methods for the control of that disease. (8) The Commission on Neurotropic Virus Diseases under the direction of Dr. John Paul, is concerned with studies of poliomyelitis, lymphocytic, choriomeningitis, equine and encephalomyelitis, St. Louis encephalitis, and other diseases. (9) The Commission on Pneumonia is headed by Dr. Colin MacLeod. (10) The Commission on Tropical Diseases, under Dr. Wilbur A. Sawyer, includes specialists in many important tropical diseases. It has been used extensively in the field.

It may be stated that this board represents a powerful part of the Army's defense against disease. It places at the disposal of The Surgeon General the best available skill and facilities, for research in military preventive medicine. The members of this board are not only helping to win the war, but they are contributing materially to our knowledge of infectious diseases.

The Venereal Disease Control Branch—The Venereal Disease Control Branch is responsible for the formulation of policies, and plans for the prevention of such diseases among troops. It is concerned with the procurement and training of special venereal disease control officers for assignment to key positions throughout the Army. Working through these officers the branch has as its objective the execution of a rigorous control program based on the following: the repression of prostitution; the encouragement of continence; provision of prophylaxis for those exposed; collaboration with civil authorities in the detection of sources of infection; provision of medical care for the infected; and, finally, the education of all military personnel regarding the strategic importance of preventing venereal infections. Obviously this program requires close collaboration with all local and federal health and law enforcement agencies. During World War I the venereal diseases caused more loss of time than any disease except influenza. It is gratifying to report that in no month of the current conflict has the admission rate been as high as the lowest monthly rate of the last war. Contrary to popular notion, the prevalence of venereal infections, acquired in the Army, is not appreciably greater than that for comparable groups in the civil population.

The Medical Intelligence Branch—The Medical Intelligence Branch is a unique part of the Preventive Medicine Division. This branch was started during 1940 in order to collect, assemble, and disseminate in the Army specific information about health and disease conditions in foreign countries. The need for such information is obvious. It affords an exact basis for planning the measures and equipment necessary to protect our forces in foreign countries.

For example, knowledge that malaria exists in a certain country is of limited value unless it is supplemented by information as to the anopheline vectors peculiar to that region and their breeding and feeding habits. The need for such exact detail is apparent when one realizes that two closely related malarious regions may be infested with mosquito vectors so different in their habits, that control measures which are effective in one of the areas might be actually harmful in the other.

The information is collected from many sources including medical libraries, current literature, Army and Navy Intelligence Service, other governmental and civilian health agencies, and individuals recently returned from foreign countries. In many instances such information has been supplemented by the reports of Army sanitarians sent abroad to make personal investigations and sanitary surveys.

After collection, the information is studied and used to prepare comprehensive health surveys. Each survey includes data on the topography, climate, and population of the country; also a brief section dealing with the public health services and the facilities for sanitation and medical care; and detailed information concerning the important diseases and their epidemiology. These surveys form the medical sections of the War Department strategic surveys, and are furnished to the commanding officers and the medical officers of all forces going to foreign countries. They are also used as a basis for the specific recommendations made for the protection of the health of all troops sent abroad, and they are sent to various teaching institutions in the Army and are used extensively by individual officers preparing for foreign duty. The activities of the Medical Intelligence Branch are an important part of the preventive medicine program.

CONCLUSION

In this brief discussion of the Army's program of preventive medicine details have been avoided. Only some of the broad objectives and the general scope of the program have been considered.

The Division of Preventive Medicine has been created in The Surgeon General's Office to plan for and exercise general supervision over the preventive aspects of military medicine. It serves as a policy forming agency which can coordinate the experience of the forces in the field and provide for the development of sound preventive practice.

In the evolution of its present program the Army has had the assistance of numerous civil agencies, both official and voluntary, and the advice of countless civilian specialists. To read the roster of those who have participated in this coöperative program would mean essentially calling the roll of the country's outstanding medical institutions and investigators.

The execution of the preventive medicine program is a responsibility which must be shared by every individual in the entire military force. The effectiveness with which it is executed will depend on the intelligence and zeal with which individual medical officers carry out the primary mission of the Medical Department.

Home Drying Methods and Their Effect on the Palatability, Cooking Quality, and Nutritive Value of Foods*

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As my title suggests, I am presenting home dehydration as a problem somewhat apart from commercial dehydration and commercially dehydrated products. The reason is doubtless obvious: relatively crude equipment, lack of technical knowledge or skill on the part of the homemaker, limitations of time and space, and variability in quality and amount of material to be dehydrated are factors which tend to limit the degree of uniformity which can be expected in home dehydration at present.

Our research is definitely aimed at improvement of home dehydration equipment and at making available practical directions for home dehydration which will enable the homemaker to develop skill and to make the best use of her space, equipment, and homegrown produce. At the same time, we have been studying the edible quality and to some extent the nutritive value of home-dehydrated fruits and vegetables. The present results in this field of research give us merely a picture of what may be expected in home-dehydrated products made according to present knowledge and facilities. We believe that edible quality and nutritive value of home-dehydrated foods may be improved as better methods and better equipment are made available to the homemaker.

Work on edible quality includes problems of rehydration and cooking of the plain material and of its preparation in various recipes. Palatability studies are of prime importance because they are used (a) as a means of evaluating the dehydration process itself, (b) as a means of evaluating different storage conditions, and (c) as a basis for judging the value of the rehydrated and cooked product and of the recipes developed for the use of dehydrated products. Obviously, the most nourishing food is of no avail if it does not taste good enough to be eaten by the family.

Nutritive value is important because, once a product of acceptable edible quality has been produced, the question immediately faced is that of whether the eating of a dehydrated food assures the consumer of nutrients similar in kind and amount to those found in the same food when fresh, canned, or frozen. Some nutrients which are destroyed by heat, oxygen, or light are known to decrease after ordinary cooking or canning. The fact that some nutrients may be lost during dehydra-

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tion is not, therefore, a reason for condemning such a process. It is, however, reason for continuing to work on improvement of the process until the greatest possible conservation of nutrients, consistent with good keeping properties and good edible quality, is attained.

At the Bureau of Home Economics and in three coöperating states—California, New York, and Texas—much attention has already been given to home dehydration. Due to scarcity of strategic materials, it was not possible this year for many families to obtain pressure cookers for processing non-acid foods. By 1943 it is possible that cans and gaskets of suitable quality may also be difficult to get. Starting with the literature available from *Farmers' Bulletin 984* [1] and from the various experiment station and extension service leaflets, the preparation, drying, and storing of various fruits and vegetables was begun. In this phase of the work, the dehydration process itself was carried on so as to permit some direct comparisons of the nutritive value of fresh and corresponding dehydrated samples of vegetables of known variety and cultural history.

EQUIPMENT AND METHODS

Driers—Two cabinet driers were constructed for use over kerosene heaters according to directions by Cruess,[2] issued by California Agricultural Extension Service. Recently a new edition of this leaflet has been issued.[3] Trial runs on one sample of beef and several vegetables were made according to Cruess's directions. With the cooperation of the Housing and Household Equipment Division of the Bureau, modifications based on this experience were made in the construction of the drier. This is described in a recent bureau publication.[4]

A drier of tunnel type with electric heater and fan which had been developed experimentally by the Rural Electrification Administration and sent to us for practical drying tests was also used. This was modified by the Housing and Household Equipment Division in the light of our exploratory experiments. Two other electric driers were used for some tests but were not available for intensive experimentation. A few tests using range ovens have been made. One drier which sits on the top of a gas range is now being tested.

Choice of foods for drying—Sweet potatoes, snap beans, and leafy greens were first chosen for particular attention because they represented different types from the point of view of nutritional value and drying qualities. Quantities of the first two of known variety and cultural condition were available by courtesy of the Bureau of Plant Industry. As time permitted and foods were available other kinds were dried.

Preparation for drying—Using existing directions for home and commercial drying as a basis, procedures for each food studied were adopted or developed with the manifold purpose of:

1. Preparation in a form suited to quick and efficient drying
2. Preservation of edible quality
3. Preservation of nutritive value
4. Use of existing home kitchen facilities and minimum of special supplies or equipment
5. Economy of housewife's time

Frequently, a compromise has to be made in final directions for drying because a method which is optimum for one purpose is least desirable for another.

Objective 1 usually is accomplished best by dividing material into small pieces for quick penetration of heat in the pretreatment and quick evaporation of water during drying.

Objectives 2 and 3 are accomplished best by the method which assures quick and complete destruction of enzymes during pretreatment, minimum loss of

soluble nutrients, and minimum temperature and length of time for drying. Steaming until almost done was the most effective method found.

Objective 4 is accomplished by avoiding when possible the use of special chemicals such as lye or citric acid (commonly used for commercial dehydration) and improvising ways of steaming relatively large quantities with materials available in most rural homes.

Objective 5 is frequently difficult to reconcile with objective 1, since peeling, cutting of small pieces, and careful spreading on trays are time consuming. Methods were avoided, however, which seemed to require a prohibitive amount of preparation time.

Sampling—Careful plans were made to assure adequate sampling of the food as purchased, as prepared for drying, after pretreatment, after drying, and for storage studies. Results in our own and other laboratories indicate that proper sampling is often difficult and that improper sampling leads to conflicting evidence and undependable conclusions.

The drying process—Automatic recording of temperatures measured by thermocouples placed at various points in the loaded driers was arranged by the Equipment Division. Measurements by means of household thermometers were made at intervals. These make possible a comparison of the drying temperatures found effective in each home drier with those appearing in the literature as applying to elaborate commercial dehydrators. Eventually some translation of the safe temperature range as measured by the thermocouples into terms of a household thermometer placed at a convenient place on the drier will be made. More exhaustive studies of physical aspects of the running of the driers are contemplated by the Housing and Household Equipment Division.

Each food presents a new problem in each drier. In general, existing directions were followed when available and in the light of experience modifications were made.

In the kerosene drier, the Cruess directions were to change trays every half hour so as to avoid overheating of the food on the lower trays and inadequate heating of the trays above. Longer time intervals throughout or at the later stages of drying have been tried and recommendations developed as a result of these investigations.

No changing of trays is necessary in the modified electric drier.

Tests for dryness—Laboratory determinations for moisture were made at the end of the drying process as a check on the rule of thumb directions given for homemakers in *Farmers' Bulletin 1918*.

Packages and storage—In general, the packages of the dehydrated product were determined by what would be available to the homemaker. Glass jars, tin cans, or other containers which could be hermetically sealed were used. Also waxed paper cartons, paper bags, etc., were used for storing miscellaneous samples.

Due to limitations in amounts of dehydrated material for direct comparison on storage studies, only two variables could be studied on each run, e.g., 2 packages at one temperature for 1 length of time, 1 package at one temperature for 2 lengths of time, or 1 package at two temperatures for 1 length of time. Temperature levels represented a range of from 0° F. to 105° F. Humidity was not controlled, but for the permeable or semipermeable containers, storage in the Beltsville laboratory represented high relative humidity a large part of the time.

PALATABILITY TESTS

Organoleptic tests are necessarily subjective in nature and it is difficult to

set up objective standards for evaluation of palatability. Judging of foods has long been a part of the work of the Food Utilization Section. Moreover, a judging panel of members of the Bureau of Animal Industry and Bureau of Home Economics staffs has been working for some years on meat and poultry tasting.

The dehydration work, however, presented such a large volume of tasting to be done on such a wide variety of foods, and the results of such tests were so important because they were the basis of decisions as to successful processing, that it was decided to develop if possible a more objective method of selecting judges and of setting up judging panels. For that purpose, a system was developed for testing individuals for their sensitivity to odors and to four basic tastes: sweet, sour, bitter, and salt.

On the basis of these tests, individuals who showed poor sensitivity were eliminated as judges. The others were called upon as needed and when available.

Cooked dehydrated products were scored by a panel of five judges for appearance, odor, flavor, consistency, and acceptability. The definitions of the judging terms are (1) excellent—quality equal to the best fresh, (2) good—satisfactory, (3) fair—below average, but not objectionable, (4) poor—objectionable but edible, (5) very poor—inedible.

Snap beans—Snap beans were not in prime condition when received. They rated "good" when cooked but fresh beans should be "excellent." Beans were shredded lengthwise, because in preliminary tests they were the only ones that retained any vitamin C. Snap beans were soaked in 15–20 times their weight of water (well covered) for 2 hours; then cooked in a covered pan with salt added, until tender. Butter was added.

They rated "fair" when dried as compared to "good" when fresh. Some experienced tasters considered the dried beans on a par with or better than canned.

After cooking there was considerable water remaining which had a strong, unpalatable flavor. This was discarded although it is obvious that soluble nutrients were discarded also. We plan to study more exhaustively possibilities of cooking so as to conserve both palatability and nutritive value in the food as served.

Beets—Beets, when fresh were scored "good" and maintained this score after precooking, dicing, dehydrating, reconstituting, and cooking. Precooked sliced beets of the same lot scored only "fair," however.

Carrots—These were scraped and then cut crosswise, diagonally, in lengthwise strips, shredded or diced. From palatability scores on the dehydrated product, it seems that crosswise slices, diagonal slices or shreds rate highest. These cuts reconstitute more completely and have a nicer appearance than the others.

Dehydrated carrots were soaked 1–2 hours in 10 times their weight of water and cooked until tender, from 4 to 24 minutes.

Sweet potatoes—Sweet potatoes were steamed until tender, peeled, cut lengthwise in slices ¼ inch thick, and dipped in a 2 per cent citric acid solution. The acid improves the color and gives a slightly sour flavor to the sweet potato.

Dehydrated sweet potatoes were soaked in 4 times their weight of water (just covered) for 1–2 hours or until plumped. They were cooked in the soaking water until tender, 10–30 minutes. The cooking water was discarded because of its sickening sweet flavor. Butter was added.

Most of the fresh sweet potatoes rated "good," only one was "excellent." After dehydration they rate

from poor to good, depending upon variety and method of dehydration.

KEEPING QUALITY OF DEHYDRATED VEGETABLES

Sweet potatoes — Dehydrated sweet potatoes stored in used coffee tins compared favorably with those stored in glass jars, tightly closed.

Nancy Hall sweet potatoes retained their original quality after 2 months' storage in a cardboard box at 74° F. and around 50 per cent relative humidity.

Mayonnaise jars without a rubber ring ranked as high as airtight fruit jars with a rubber ring and sealed with paraffin, stored at high humidity and a cool temperature.

The palatability of one lot of dehydrated sweet potatoes held at different temperatures packed in airtight glass jars showed after 2 months' storage edible quality ratings of "very good," "good," and "fair," at 45° F., 74° F., and at 100° F., respectively. These potatoes were not treated with citric acid before dehydration and therefore may have been more easily affected by higher temperatures than those treated with citric acid before dehydration. The palatability scores for a citric acid treated sweet potato show better keeping quality with no appreciable difference attributable to temperature or storage container. This citric acid treatment had been recommended by Caldwell in *Farmers' Bulletin 984*.

After 2 months' storage no differences were apparent between the sweet potatoes packed in an inert gas, such as nitrogen, and in air.

A study was made on sweet potatoes which had been held in storage at the Bureau of Plant Industry for about 6 months. They were in good condition. All were given the same pretreatment and were dehydrated under uniform conditions in the electric drier.

Five varieties of sweet potatoes ranging in color from deep orange through light orange and straw-colored to grayish-cream rated "fair" to "good" in palatability when (1) cooked fresh, and (2) precooked after citric acid dip. With but one exception, the citric acid treated sample rated the same or better than the plain potato, and in all cases the freshly dehydrated rated the same or better than the freshly cooked.

The palatability after 3 months' storage at 32° F. remained as good as before storage in two samples, but had dropped about 1 point in three instances (from "good" to "fair" in two, and from "very good" to "good" in one).

The storage study is very incomplete at present. Many foods have not been tested at all, and others have been tested after 1, 2, or 3 months only.

Greens—Mustard greens and chard were stored at room temperature in friction top tin cans and waxed paper cartons, respectively. Mustard greens showed no appreciable loss in palatability after 2 months' storage at room temperature.

After 2 months' storage at room temperature, the palatability of four samples of chard has decreased more than after 1 month in comparable vegetables. Further tests are needed before any definite statement of trend can be made.

Snap beans—Snap beans stored at 100° F. exhibited a color change to a tan shade whether stored in airtight or non-airtight containers. However, this lot of beans before storage were a yellowish green and not of very good quality.

In two preliminary experiments dehydrated beans have been tested after 6 months' storage. At this time they rated "fair" in palatability and were green in color. This is as good or better than most of the freshly dehydrated snap beans.

Since our data on the keeping quality of beans at various temperatures is very meager as yet, it is impossible to say that dehydrated snap beans deteriorate faster at high temperatures than low when packed in airtight or non-airtight containers.

NUTRITIVE VALUE OF HOME-DEHYDRATED VEGETABLES

Vitamin and mineral losses during preparation, dehydration, and storage were studied on several foods dehydrated by home methods in the Bureau of Home Economics laboratories. Calcium, phosphorus, and iron were determined on sweet potatoes, turnip greens, snap beans, and beets. These vegetables were steam blanched before dehydrating. The results showed a loss in mineral content of about 20 per cent, with the greatest loss occurring in phosphorus and the least in calcium. Theoretically, there should be no loss of minerals during actual dehydration. Mineral determinations are made, however, as a check on our sampling procedures.

The following are the findings on the vitamins:

Sweet potatoes—Steam blanched, no change in carotene; 20 per cent ascorbic acid is lost by this pretreatment. After dehydration by the Rural Electrification Administration electric drier, no loss in carotene; only 11 per cent of the ascorbic acid is retained; after cooking the fresh, dehydrated sweet potatoes, no change in carotene but considerable loss in vitamin C occurred. After 2 months' storage at 74° in glass jars under CO_2, kept in the dark, there is no change in these vitamins.

Turnip greens—During pretreatment, which was steaming, there was 25 per cent loss in the vitamin C content. Using the same method of pretreatment, but for a period of two to three times as long as the first, there was 67 per cent loss of vitamin C. A kerosene drier was used and the drying period was about one-third longer than the one used on the sweet potatoes. Where the electric drier was used, there was about the same loss (65 per cent) in vitamin C.

Snap beans—During steam blanching, there was a 30 per cent loss of ascorbic acid. The drying methods consisted of (1) hanging on strings at room temperature for 6 days—all ascorbic acid was destroyed; (2) Rural Electrification Administration electric drier—35 to 50 per cent loss in ascorbic acid, depending upon the length of drying time.

In the string beans, the carotene content of the starting material was not too great to begin with; what there was appears to be practically all destroyed by these methods of drying.

Of interest in the case of the snap beans is the fact that during pretreatment, preparation of the vegetable is a factor as to the degree of loss in ascorbic acid. The loss of this vitamin is greater when the bean is steamed whole than when steamed shredded or cut. This may be explained by the fact that the heat penetrates the bean tissue to a greater degree in the shredded or cut bean, and destroys the enzyme more effectively.

CONCLUSION

In conclusion, it must be remembered that these results are only an indication of what happens during dehydration, since the methods have not yet been perfected. When these foods were dried, the number of foods was necessarily limited and our storage studies are still in progress.

In general, it may be said that many foods can be dried in simple apparatus to form a palatable product. The retention of nutrients depends considerably on the degree of control made possible by a given drier, but can be controlled to some extent by the use of

good methods of preparing for the drier. For any given food, the palatability depends not only upon the drying, but on the method used for rehydration and cooking, and on the quality of the fresh material. Moreover, no matter how good the freshly dehydrated product may be, adverse storage conditions result in loss in edible quality and nutritive value. The problem of home storage of dehydrated vegetables must not be forgotten, particularly since the kinds of container available are limited and facilities for cool dry storage are not available for many families.

Work is still going on in the bureau and in certain experiment stations. The results from other experiment stations have not been reported here but will soon be available.

There is reason to believe that better driers, better methods of drying, and more information on necessary conditions for storing will be developed.

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Blood and Malaria Parasite Staining with Eosin Azure Methylene Blue Methods*

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IN 1939 it became apparent to those interested that many field workers in malaria were using Grübler's Giesma stain for thick film work, and were unable to obtain results satisfactory to them with the Giemsa stains then manufactured in the United States. The difficulty was that when staining at pH 7.0, which seems best for thick film work, the German stain gave a clear, light blue coloration to plasmodial and lymphocyte cytoplasm and a sharp reddish-purple chromatin stain, whereas American samples then available gave a grayish-lilac cytoplasmic coloration and a denser red-purple chromatin stain. This gray-lilac was difficult to distinguish in the similarly but less intensely stained background of detritus in the thick film, and from the gray-pink cytoplasm of red corpuscles at pH 7.0.

In attempting to solve the difficulties the available pure dyes of the methylene blue thionine series were tried in combination with eosin and with each other. To afford greater ease in manipulation, we decided to use the Nocht method, which consists in using 1:1,000 solutions of eosin and thiazin diluted in buffered water, on account of its extreme flexibility.

Azure B turned out to be the best single dye, although MacNeal and others had thought this dye of relatively low value. It was also found that the desired depth of cytoplasmic and background staining required a slight excess of basic dye over the amount equivalent to the eosin. This accords with Giemsa's original work.

Spectroscopic studies done at this time revealed that the imported Giemsa stain contained chiefly azure B and methylene blue, agreeing perfectly with our experimental findings.

Our first formulae were derived directly from the Nocht method. One consisted of methylene blue 270, azure B 200, azure A 50 and eosin 500 dissolved as such in 100 ml. of a mixture of equal parts of glycerin and methyl alcohol. This stain was highly satisfactory.

However, as soon as an attempt was made to translate this into commercial production, variation in dye content of the four dyes led to difficulties. So, believing that the precipitated eosinates would be of more constant dye content, further formulae were evolved on that basis, and the first few commercial samples were eminently satisfactory. Such samples consist basically of 50 mg. azure A eosinate, 250 mg. azure B eosinate, 200 mg. methylene blue eosinate and 100 mg. methylene blue

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 29, 1942.

in 100 ml. of the glycerin and methyl alcohol mixture.

After a time this method in turn broke down and the spectroscope showed that the difficulty lay in qualitative variation in composition of the azure B. One of the methods of making azure B is to oxidize methylene blue to crude azure A with hydrochloric acid and potassium bichromate and then again to reduce this with formaldehyde by heating under a reflux condenser. This was supposed to yield only azure B. However, a trial of this reduction process in my hands has yielded on at least one trial almost pure methylene blue, as well as products spectroscopically intermediate between azure B and methylene blue.

It would appear that the commercial method of manufacture of azure B will have to be revised by introducing spectrographic control, by further study of the variation factors in the formaldehyde synthesis, or by going over to the partial-oxidation process which appears to yield quite constant products spectroscopically when the same proportions of chromate and methylene blue are used. This has been done and has been found to yield a more uniform product.[9]

However, with the coöperation of the Stain Commission and the dye companies, after excluding some samples which do not turn out well, we are now able to obtain on the market quite satisfactory Giemsa stain for blood and parasite work.

Turning to Wright's stain we find that commercial samples of this on the market, found in various laboratories and furnished for certification to the Stain Commission, vary considerably in staining capacity. Some samples yield pale blue nuclear staining with satisfactory light blue lymphocyte cytoplasm, good neutrophil and eosinophil granules and orange-pink-red corpuscles staining at pH 6.5 with a 1:2 dilution. Such samples, though offered as Wright's stain, are essentially eosinates of unaltered methylene blue, or Jenner's stain. Spectroscopically these give absorption maxima between 660 and 665 for the thiazin, 515–518 for the eosin. I consider these unsatisfactory. Other samples give blue-violet to reddish-purple leucocyte and parasite chromatin, clear, light blue parasite and lymphocyte cytoplasm, good granules and orange-pink-red cells. Here absorption maxima range from 660 for the bluer samples to 645 or 650 for the redder. These are quite good for blood and parasite work. Still other samples give denser reddish-purple chromatin in white cells and parasites, more gray-lilac cytoplasm in lymphocytes and parasites, perhaps less satisfactory eosinophils, good azure granules and orange-pink-red corpuscles. Here absorption maxima range from 620 to about 640. Some workers prefer such samples for blood work, but they seem less satisfactory for malaria parasites, trypanosomes, etc.

Such variation occurs even in successive samples from the same manufacturer and appears to be inherent in the Wright method of polychroming. This calls for heating at about 98° C. for an hour, in relatively shallow layer, of 1 per cent methylene blue in 0.5 per cent sodium bicarbonate. Extended experimental work has shown that marked variations in such products are produced with variations in the amount of evaporation occurring, in exposure to air, in pH of the initial mixture, and apparently by taking the sodium bicarbonate out of different bottles.

However, by prevention of evaporation, by rigidly controlling pH by using standard buffer mixtures in place of the apparently variable sodium bicarbonate, and by close control of time, temperature, dye content of methylene blue and its concentration in solution, it is possible consistently to produce polychrome methylene blues in

the azure A or azure B range which will vary by less than 5 milli-microns in the position of the absorption band on repeated trial. So it would appear that, when the preference of workers as to color effect can be learned, it should now be possible to duplicate closely Romanowsky stains of Wright type in successive batches.

We have been greatly aided in these attempts at standardization of Romanowsky stains by study of their absorption spectra and the correlation of these with the staining capacity of the samples. It was my belief that a similar method of study would be valuable in determining the causes of deterioration of solutions in methyl alcohol or glycerin and methyl alcohol of these stains. Accordingly, studies were initiated last August using a number of samples of Wright's stain solution which had been on the laboratory shelves for intervals varying from 1 week or so up to over 3 years, as well as freshly prepared solutions of two samples, one with an original thiazin absorption maximum at 656, the other at 621 mμ. To these latter various contaminants were deliberately added at 2 per cent concentration and spectra were run at intervals from 2 days up to 2 months at the present writing. The samples have also been tested as blood and parasite stains at the start and at the end of this period.

Summing up this work to date, old samples which no longer give satisfactory stains show absorption peaks generally below 615 mμ, which represents a fairly pronounced shift from the original in many on which spectra were made when they were fresh. Crude chemical separations of some of these samples indicated formation of considerable amounts of methylene violets, apparently more than the remaining azures, though thoroughly satisfactory separations have not yet been worked out.

The deliberately contaminated samples all showed progressive shift of the absorption maxima toward 600 mμ. This was fastest when repurified methyl alcohol was shaken with Na_2CO_3 and then filtered and used as a solvent. Acetone and formaldehyde both accelerated the shift, and methyl alcohol redistilled over silver oxide to destroy aldehydes showed a slower shift than commercial C.P. grade. Two per cent water had little appreciable effect. Formic acid seemed to act as a stabilizer for the thiazin, but this ruins the eosin component for staining purposes. However, after 2 months the repurified methyl alcohol solution had reached the same point as those contaminated with acetone or formaldehyde. Hence it would seem that the repurification of methyl alcohol was of little value.

However, the most obvious and striking finding was that solutions from the sample with an initial absorption peak at 656 were still good stains after 2 months in solution in pure, commercial, or acetone- or formaldehyde-contaminated methyl alcohol, while the solutions made from the sample with an initial maximum at 621 were all worthless in less than a month in spite of originally brilliant staining.

In the first instance absorption maxima were still above 630 after 2 months, while in the second they were below 615 in less than 2 months.

Hence it would seem that we should require initial absorption maxima for Wright's stains between 650 and 660 mμ.

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Radio Listening Habits of Mothers Who Attend Well Baby Clinics

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HEALTH officers and health educators are concerned with the radio listening habits of mothers since, because of their positions in the home, they constitute a strategic health education audience. We undertook to secure information on this topic in the Boston Health Units by interviewing mothers.

A series of 250 interviews, lasting about 10 minutes each, were conducted at eleven health units and baby stations over a period of nearly 2 months. Experimental interviews supplemented thoughtful planning in deciding what information we should seek, and how the interview could best be conducted. Leading questions were avoided. Freedom of expression was encouraged. The series of questions which the interviewer had in hand were used as a guide in informal discussions rather than as a formal questionnaire for which categorical answers were sought. The validity and reliability of the findings were tested by a comparison of the tabulations on the analysis of the first 125 interviews with the tabulations of the second 125 interviews. These were remarkably similar.

Two hundred and fifty mothers were interviewed in the sequence in which they happened to come to the clinic waiting room, and they represented, therefore, a fair sampling of the women attending well baby clinics in Boston. The mothers interviewed were a young group, 81 per cent of whom were under 35 years of age. They had a total of 471 children; their families range from one to eight children; the children ranged in age from 2 weeks to over 20 years, but 45 per cent of all the children were infants.

WHEN DO MOTHERS LISTEN TO THE RADIO?

Every mother, except one, owned a radio and she was about to purchase one. Despite the fact that they were from the low income group, 30 per cent of them owned from two to four radios each, so that the group of 250 mothers possessed 336 radios. Forty-eight per cent of these radios were located in the kitchen and 17 per cent in bedrooms. This means the mothers can listen while doing housework in these rooms. Seventy-seven per cent of the women said they always do housework when listening and practically never sit down to listen to the radio when idle. Ninety-four per cent said that at least one of their radios is conveniently located for listening during the day. Seventy-two per cent of the mothers listen every day, while 87 per cent are regular evening listeners. Eighty-two per cent claimed to be the person who usually turns on the radio in the home. An added 12 per cent said that they "frequently" turn on the radio themselves.

Eighty-seven per cent select, at least

part of the time, the programs they hear instead of just tuning in regardless of the station to which the dial is turned. Forty-seven per cent of this group always select the programs to which they listen. Only 13 per cent of the mothers interviewed never choose the programs they hear. There is less selection of programs in the daytime than in the evening. Of those reporting specifically on daytime listening habits, 33 per cent select their programs. Of those reporting on evening listening, 79 per cent select their programs. Despite low daytime selectivity, there is no one station the favorite of the majority of the mothers; 56 per cent expressed a preference for a particular station for daytime listening; 90 per cent of these choices were divided about equally among three well known Boston stations.

Eighty-six per cent of the mothers listen to programs between 7:00 P.M. and 10:00 P.M., while 92 per cent listen at least some time between 9:00 A.M. and 12:00 noon. The latter hours represent the best choice of listening time for a peak audience composed chiefly of women.

ATTITUDES TOWARD HEALTH PROGRAMS

We sought to find out from the mothers whether they would like a health program, and if so what would be their preference as to the type of program presented and the hour preferred. In examining the data presented from this phase of the study, the reader should bear in mind that there may be a sharp difference between what the mother thinks she might like and what she would listen to if it were on the air. As a matter of fact, their expressed preferences do not square too well with their present listening habits.

The majority, 88 per cent, expressed themselves enthusiastically in favor of a health program, 10 per cent stipulating that they would listen if the program proved interesting and entertaining, as well as valuable. Only 2 per cent of the interviewees said they would not listen to a health program. Fifty-eight per cent of the women prefer their health program to be on the air between 8:00 A.M. and 12:00 noon, while 19 per cent would find the hours between 6:00 P.M. and 10:00 P.M. most convenient. The remaining 23 per cent prefer afternoon hours. It is evident here that three times as many women prefer morning hours to evening.

The fifteen minute programs are the present favorites of the mothers, notably the so-called "soap operas" and the homemaking programs planned for women. Thirty-eight per cent of the mothers reported hearing at least one of the homemaking programs; 56 per cent told of following the serial dramas sponsored by the soap companies; and 11 per cent selected this latter form as their favorite of all types, while 6 per cent said they do not like the soap operas. Dramas of other types, broadcast both day and night, are enjoyed by 59 per cent of the mothers. Twelve per cent selected drama as their best liked program, while only 1 per cent said they do not like to hear stories on the radio. A low number of interviewees, 9 per cent, reported ever listening to any form of educational broadcast, and only two mothers chose this style as their favorite.

Some of the mothers contradicted their expressed tastes when choosing the style they preferred for the health education broadcast. Thirty per cent asked that the health program be presented as a talk, although only 9 per cent of them listen now to any form of educational program. They qualified, however, that the talk be "interesting —not dull or monotonous." What constitutes any of these qualities is an individual matter. It is difficult for a sponsor to satisfy all listeners. The interview was preferred by 15 per cent

and the discussion by 6 per cent. The former, particularly, is adaptable to health education material. Twenty-seven per cent chose the drama as the form most desired for reception of the health broadcast. As we recall from above, over one-half of the women listen to dramas and 23 per cent chose a dramatic form as the one best liked, while less than 1 per cent prefer educational programs. In view of these facts, we are not convinced that the health "talk" is the medium of choice.

Next, the mothers were asked what topics they would like presented in a health program. Extensive health knowledge was not to be expected in this group, and the lack of such information was reflected both in their inability to select health topics and in comments made during the interviews. One-third of the mothers had no topic to suggest. The other two-thirds suggested topics that fit into one or more of the following categories: food and nutrition, child training and growth, budgeting, clothing, personal hygiene, mental hygiene, communicable disease and household hints. As would be suggested by the fact that they were attending well baby clinics, most of the mothers wanted information about babies. Many did not seem to recognize their own health problems, for some who said they had no need of special help had very evident dental caries, eyestrain exhibited by frowns and squints, underweight, poor personal hygiene, and other correctable conditions. Those who suggested a subject usually added that any topic both practical and timely would meet a need and would prove interesting.

SUMMARY

From a study based on 250 interviews with mothers who attend well baby clinics it appears that nearly all mothers can be reached by radio. The morning is the most favorable time for mothers to listen, 10 o'clock being the hour of choice by the greatest number of mothers. Although more mothers (30 per cent) suggested health talks than any other single form of presentation, the number suggesting either drama or interview-discussion totaled 48 per cent. This preference and their present listening habits both suggest that the program using more than one voice (interview or drama) should be widely used.

Building an audience will be necessary regardless of the station from which the program originates. This may be carried out through health department personnel and by posters in health units as well as by spot announcements and other common forms of publicity.

The careful measurement of a well developed morning radio program for mothers is needed to indicate its value in the general health education program.

Surveys of the Nutrition of Populations*

2. The Protein Nutrition of a Rural Population in Middle Tennessee

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IN a previous paper [1] the general procedures and methods of a survey of the nutrition of a population in Wilson County, Tenn., have been given together with a description of the population and the results of the survey as they concern calories. The present report deals with the protein nutrition.

METHODS

Dietary: There were no special procedures with respect to the dietary study which require comment, the record of food consumption being obtained as previously described. Values for the protein content of the food were taken principally from *Laboratory Handbook for Dietetics*, by Mary Davis (Swartz) Rose.[2] When necessary these were supplemented by values from *The Fundamentals of Nutrition*, by Hawley and Maurer-Mast,[3] *The Farmer's Bulletin, Rabbit Raising*, U. S. Department of Agriculture,[4] and *The Structure and Composition of Foods*, by Winton and Winton.[5] In a few instances when reported values were not available, values were arbitrarily assigned. In no case were such instances of sufficient importance to modify the significance of the results. Details of the values are given in the working tables.†

History and Physical Examination— The only practical evidence of protein deficiency which can be obtained from the history and physical examination in a survey such as this is the occurrence of edema not attributable to other causes. This was, therefore, a point of particular inquiry in the history and on the examination. The usual clinical manifestation of edema, pitting on pressure, served as the sign of abnormality.

Laboratory — Serum proteins were determined in part by the macro-Kjeldahl method using Howe's procedure for separation of the protein fractions,[6] and in part by the biuret technic as described by Robinson and Hogden.[7] The Kjeldahl procedure though reliable, accurate, and a standard procedure, is costly in time and reagents. The biuret test was found to be reliable with "normal sera." However, extensive studies on sera in disease other than protein deficiency revealed discrepancies when compared

* The Studies referred to herein were conducted under the auspices of the International Health Division of the Rockefeller Foundation of New York City by the Nutrition Unit of the Departments of Medicine and Biochemistry of the Vanderbilt University School of Medicine, Nashville, Tenn.

† Copies of these tables are much too lengthy for publication with these reports. They can be furnished by special arrangement by writing to the authors, as may copies of record forms used.

with duplicate Kjeldahl determinations. Therefore, while the procedure appears to be satisfactory when applied to an essentially "normal" population in which only an occasional false value might be gotten, it does not appear as reliable for general use as the Kjeldahl procedure.

RESULTS

The results are shown in the accompanying tables and charts. The total intake of protein was low in a large number of the subjects (Table 1). By far the majority had an intake less than 70 gm. which is the minimum recommended allowance of the Food and Nutrition Board for any except children under 10 years and adult women, for whom recommended allowances are 60 or less. Many had an intake of less than 50 gm. Low intakes (below 50

TABLE 1

Total Protein Intake among Persons in the Survey
Distribution of Total Protein Intake According to Age, Sex, and Race *

Total Protein Intake	Age in Years										
	1–3 Yrs.	4–6 Yrs.	7–9 Yrs.	10–12 Yrs.	13–15 Yrs.	13–15 Yrs.	16–20 Yrs.	16–20 Yrs.	21+ Yrs.	21+ Yrs.	
Grams	M-F †	M-F	M-F	M-F	M	F	M	F	M	F	Total
						White					
<25	8	2	3	1	0	0	0	1	0	3	18
25– 49	26	24	22	19	2	11	1	7	19	96	225
50– 59	2	10	13	12	3	5	2	5	31	50	133
60– 69	1	7	15	4	2	1	6	7	28	37	108
70– 79	3	4	8	6	1	2	6	8	35	15	88
80– 89	1	0	2	4	8	0	6	0	30	16	67
90– 99	0	1	0	2	1	0	7	1	24	2	38
100–109	0	0	1	0	0	0	4	1	22	4	32
110–124	0	0	1	2	1	0	3	0	10	1	18
125+	0	0	1	0	3	0	2	0	19	1	26
Unknown	0	0	0	1	0	0	3	3	10	4	21
Total	41	48	66	51	21	19	40	33	228	229	776
Mean Intake	38	48	56	57	83	48	87	60	82	56	64
Standard Error of Mean	2.77	2.36	2.67	3.16	6.46	3.06	3.62	3.52	1.82	1.08	0.97
Standard Deviation	17.7	16.3	21.8	22.3	29.6	13.3	22.0	19.3	26.9	16.2	26.7
Median	37	48	56	54	83	46	86	63	79	53	60
						Colored					
<25	20	7	3	2	2	0	0	1	1	12	48
25– 49	12	15	18	17	3	11	5	14	25	51	171
50– 59	1	1	1	4	1	1	3	5	18	15	50
60– 69	0	1	2	3	3	1	4	3	15	7	39
70– 79	0	0	0	3	0	0	7	1	12	4	27
80– 89	0	0	0	2	3	0	0	0	10	2	17
90– 99	0	0	0	0	0	0	1	0	7	0	8
100–109	0	0	0	0	1	0	1	0	5	0	7
110–124	0	0	0	0	1	0	0	0	0	0	1
125+	0	0	0	0	0	0	0	0	2	0	2
Unknown	1	0	2	0	1	2	1	0	3	5	15
Total	34	24	26	31	15	15	22	24	98	96	385
Mean	23	31	38	48	60	44	64	44	65	42	48
Standard Error of Mean	1.95	2.71	2.47	3.27	8.9	2.54	4.15	3.04	2.47	1.78	1.19
Standard Deviation	11.2	13.3	12.6	18.3	33.2	9.5	19.0	14.6	24.0	16.9	23.0
Median	22	31	37	45	55	43	66	44	62	41	45

* 25 Children under one year of age have been omitted
† M = Male; F = Female

TABLE 2

Distribution of Animal Protein Intake among Persons in the Survey According to Age, Sex and Race *

Animal Protein Intake Grams	Age in Years 1–3 Yrs. M-F †	4–6 Yrs. M-F	7–9 Yrs. M-F	10–12 Yrs. M-F	13–15 Yrs. M	16–20 Yrs. M	21+ Yrs. M	13–15 Yrs. F	16–20 Yrs. F	21+ Yrs. F	Total
						White					
<10	6	8	5	5	0	0	8	3	2	20	57
10–19	12	9	16	12	2	4	26	9	9	71	170
20–24	8	5	6	9	1	5	25	0	2	34	95
25–29	5	4	6	5	3	6	21	3	2	19	74
30–34	3	7	8	5	2	3	28	2	3	20	81
35–39	1	4	7	6	0	4	19	2	4	14	61
40–49	2	5	13	4	3	3	32	0	6	24	92
50–59	3	3	2	2	5	3	23	0	1	13	55
60–69	1	1	1	1	2	2	9	0	1	3	21
70–79	0	1	2	1	1	4	14	0	1	2	26
80+	0	0	0	0	2	3	14	0	0	1	20
Unknown	0	1	0	1	0	3	9	0	2	8	24
Total	41	48	66	51	21	40	228	19	33	229	776
Mean Intake	24	28	30	27	47	42	40	19	31	26	32
Standard Error of Mean	2.32	2.47	1.97	2.16	4.67	3.64	1.42	2.36	3.03	1.04	0.69
Standard Deviation	14.8	17.0	16.0	15.3	21.4	22.1	21.0	10.3	16.9	15.5	19.2
Median	22	27	30	24	48	36	35	17	31	23	29
						Colored					
<10	17	10	13	14	3	4	19	1	4	25	110
10–19	13	9	9	12	4	5	31	9	10	36	138
20–24	3	2	3	1	0	2	8	1	3	8	31
25–29	1	0	1	1	4	4	12	3	1	9	36
30–34	0	1	0	2	1	3	7	0	4	5	23
35–39	0	0	0	0	0	1	6	0	0	3	10
40–49	0	0	0	0	0	1	3	0	0	6	10
50–59	0	0	0	0	0	0	6	0	1	2	9
60–69	0	1	0	1	2	1	0	0	0	0	5
70–79	0	0	0	0	0	0	1	0	0	0	1
80+	0	0	0	0	0	0	3	0	0	0	3
Unknown	0	1	0	0	1	1	2	1	1	2	9
Total	34	24	26	31	15	22	98	15	24	96	385
Mean Intake	11	10	11	14	24	23	24	17	19	18	19
Standard Error of Mean	1.24	1.62	1.34	2.18	4.71	3.22	1.86	1.97	2.44	1.28	0.75
Standard Deviation	7.1	8.0	6.8	12.2	17.6	14.8	18.2	7.4	11.7	12.5	14.5
Median	11	10	10	11	20	24	19	15	18	16	16

* 25 Children under one year of age have been omitted
† M = Male; F = Female

gm.)* were more frequent in Negroes than whites, 59 and 32 per cent respectively. In white children under 13 low intakes were found in from 4 to 12 per cent. Ten, 13, and 9 per cent of white males 13 to 21+ in ascending age groups had low intakes compared to 58, 24, and 44 per cent of white females respectively. Corresponding values for colored are 61 to 92 per cent in the children, 36, 24, and 27 per cent for the colored males and 85, 62, and 69 per cent respectively for the females. The smallness of some of the groups

* Approximately ⅔ recommended allowance Food and Nutrition Board

may account for some of the fluctuation, but the pattern is obvious.

Similar deficiencies were found in respect to animal protein (Table 2) with again the colored showing a low intake (less than 20 gm.) more often than the whites (63.9 and 30.1 per cent respectively). Sex and age differences were observed as for total protein. Intakes less than 20 gm. were recorded in from 31.8 to 36.1 per cent of the white children between 4 and 12, while among the white males the incidence was 9, 10, and 15 per cent in ascending age groups compared with 63, 35, and 41 per cent for white females of the

TABLE 3

Distribution of Total Serum Protein among Persons in the Survey According to Age, Sex, and Race *

Total Serum Protein / Protein Grams per 100 ml.	Age in Years: 1–3 Yrs. M-F †	4–6 Yrs. M-F	7–9 Yrs. M-F	10–12 Yrs. M-F	13–15 Yrs. M	16–20 Yrs. M	21+ Yrs. M	13–15 Yrs. F	16–20 Yrs. F	21+ Yrs. F	Total
						White					
<3.0	0	0	0	0	0	0	0	0	0	0	0
3.0– 3.99	0	0	0	0	0	0	0	0	0	0	0
4.0– 4.99	0	0	0	0	0	0	0	0	0	1	1
5.0– 5.99	2	0	0	1	0	0	6	0	0	7	16
6.0– 6.49	5	12	12	5	3	3	46	2	3	38	129
6.5– 6.99	12	11	26	20	8	14	89	6	10	74	270
7.0– 7.99	10	15	24	23	7	17	48	10	15	77	246
8.0– 8.99	1	3	1	1	0	0	4	1	0	7	18
9.0– 9.99	1	0	0	0	1	0	0	0	0	1	3
10.0–10.99	0	0	0	0	0	0	0	0	0	0	0
11.0+	0	0	0	0	0	0	0	0	0	0	0
Unknown	10	7	3	1	2	6	35	0	5	24	93
Total	41	48	66	51	21	40	228	19	33	229	776
Mean Value	6.98	6.01	6.97	7.06	7.09	7.08	6.82	7.18	7.10	6.96	6.95
Standard Error of Mean	0.14	0.10	0.06	0.08	0.18	0.08	0.04	0.13	0.09	0.05	0.02
Standard Deviation	0.78	0.66	0.51	0.53	0.78	0.44	0.55	0.57	0.47	0.66	0.61
Median	6.85	6.89	6.88	6.98	6.96	7.00	6.75	7.15	7.07	6.88	6.86
						Colored					
<3.0	0	0	0	0	0	0	0	0	0	1	1
3.0– 3.99	0	0	0	0	0	0	0	0	0	0	0
4.0– 4.99	0	0	0	0	0	0	0	0	0	0	0
5.0– 5.99	4	1	1	0	0	0	4	0	2	2	14
6.0– 6.49	4	2	3	2	1	1	19	2	5	16	55
6.5– 6.99	15	9	11	10	11	11	34	4	7	32	144
7.0– 7.99	7	9	9	17	2	8	34	9	9	37	141
8.0– 8.99	0	0	0	2	0	0	3	0	1	5	11
9.0– 9.99	1	0	0	0	0	0	0	0	0	0	1
10.0–10.99	0	0	0	0	0	0	0	0	0	0	0
11.0+	0	0	0	0	0	0	0	0	0	0	0
Unknown	3	3	2	0	1	2	4	0	0	3	18
Total	34	24	26	31	15	22	98	15	24	96	385
Mean Value	6.78	6.96	6.92	7.24	6.82	7.03	6.92	7.13	6.90	6.98	6.96
Standard Error of Mean	0.14	0.12	0.11	0.09	0.11	0.09	0.06	0.13	0.15	0.08	0.03
Standard Deviation	0.78	0.57	0.54	0.53	0.42	0.42	0.61	0.50	0.72	0.78	0.43
Median	6.75	6.92	6.86	7.21	6.77	6.91	6.85	7.18	6.86	6.93	6.90

* 25 Children under one year of age have been omitted
† M = Male; F = Female

corresponding ages. A similar pattern but a greater frequency is found in the colored. The children 4 to 12 showed an intake of less than 20 gm. in 82.6 to 84.6 per cent, colored males, 50, 42, and 52 per cent in the ascending age groups, and colored females 71, 60, and 64 per cent. Again some of the groups are rather small.

A history of edema was obtained from 49 white and 33 colored subjects. By far the greatest number were adult females (41 white and 20 colored) with only 5 white and 10 colored males, 21

TABLE 4

Distribution of Serum Albumin Levels among Persons in the Survey According to Age, Sex and Race *

Serum Albumin	*Age in Years*										
Grams per 100 ml.	*1–3 Yrs. M-F* †	*4–6 Yrs. M-F*	*7–9 Yrs. M-F*	*10–12 Yrs. M-F*	*13–15 Yrs. M*	*16–20 Yrs. M*	*21+ Yrs. M*	*13–15 Yrs. F*	*16–20 Yrs. F*	*21+ Yrs. F*	*Total*
					White						
<2	0	0	0	0	0	0	0	0	0	0	0
2.0– 2.99	0	0	0	0	0	0	0	0	0	1	1
3.0– 3.49	0	1	0	0	1	1	1	0	1	6	11
3.5– 3.99	0	1	1	1	1	2	17	0	2	10	35
4.0– 4.24	0	4	3	4	3	5	11	3	0	25	58
4.25–4.49	7	4	5	9	1	2	38	4	6	32	108
4.5– 4.99	10	17	33	19	6	15	94	7	13	95	309
5.0– 5.49	10	10	19	13	6	9	26	4	7	33	137
5.5– 5.99	3	2	0	3	0	0	4	1	0	4	17
6.0– 6.99	1	1	0	0	0	0	0	0	1	0	3
7.0+	0	0	0	1	1	0	0	0	0	0	2
Unknown	10	8	5	1	2	6	37	0	3	23	95
Total	41	48	66	51	21	40	228	19	33	229	776
Mean Value	4.98	4.81	4.83	4.86	4.80	4.67	4.63	4.73	4.32	4.42	4.70
Standard Error of Mean	0.09	0.09	0.04	0.08	0.20	0.09	0.03	0.10	0.16	0.07	0.02
Standard Deviation	0.51	0.57	0.35	0.58	0.87	0.50	0.45	0.46	0.80	0.63	0.51
Median	4.93	4.79	4.83	4.79	4.79	4.73	4.65	4.68	4.38	4.37	4.71
					Colored						
<2	0	0	0	0	0	0	0	0	0	0	0
2.0– 2.99	0	0	0	0	0	0	0	0	2	0	2
3.0– 3.49	0	0	0	0	0	0	2	0	0	3	5
3.5– 3.99	1	0	0	1	2	1	12	0	5	19	41
4.0– 4.24	5	2	4	4	3	3	17	2	3	15	58
4.25–4.49	5	2	3	2	4	5	18	3	4	18	64
4.5– 4.99	13	11	13	14	3	8	37	7	7	25	138
5.0– 5.49	5	5	4	9	2	2	8	3	1	7	46
5.5– 5.99	1	0	0	1	0	1	0	0	2	3	8
6.0– 6.99	1	0	0	0	0	0	1	0	0	0	2
7.0+	0	0	0	0	0	0	0	0	0	1	1
Unknown	3	4	2	0	1	2	3	0	0	5	20
Total	34	24	26	31	15	22	98	15	24	96	385
Mean Value	4.73	4.78	4.68	4.81	4.44	4.61	4.47	4.69	4.32	4.42	4.53
Standard Error of Mean	0.10	0.08	0.07	0.08	0.13	0.10	0.05	0.10	0.16	0.07	0.03
Standard Deviation	0.54	0.35	0.35	0.44	0.47	0.46	0.50	0.37	0.80	0.63	0.55
Median	4.67	4.77	4.69	4.80	4.38	4.56	4.48	4.68	4.38	4.37	4.55

* 25 Children under one year of age have been omitted
† M = Male; F = Female

years and over, reporting this symptom. Only 3 colored children (7 to 15) and 3 white children (16 to 20) were included. Edema was found on the physical examination in 37 subjects, 25 white and 12 colored, or approximately 3 per cent of each group. However, again those with actual edema at the time of the examination were mostly women (19 white and 12 colored), with 6 white men making up the remainder. Furthermore, all but 1 were adults and all but 6 were over 35 years old.

Only 5, or 10 per cent, of the white subjects, and 6, or 18 per cent, of the Negroes, who gave a *history* of edema actually had edema on examination. This is not surprising because the history included any previous time, while the examination disclosed the condition at the time of the examination only.

The serum protein values are shown in Tables 3, 4, and 5. Rather few ab-

TABLE 5

Distribution of Serum Globulin Levels among Persons in the Survey According to Age, Sex and Race *

Serum Globulin	Age in Years										
Grams per 100 ml.	1–3 Yrs. M-F †	4–6 Yrs. M-F	7–9 Yrs. M-F	10–12 Yrs. M-F	13–15 Yrs. M	16–20 Yrs. M	21+ Yrs. M	13–15 Yrs. F	16–20 Yrs. F	21+ Yrs. F	Total
						White					
<1.0	1	1	0	0	0	0	1	0	1	1	5
1.0– 1.49	4	3	8	3	1	2	9	0	1	7	38
1.5– 1.99	10	12	17	10	5	7	66	6	6	54	193
2.0– 2.49	10	14	26	26	8	18	79	8	8	82	279
2.5– 2.99	3	7	9	10	3	4	23	2	8	37	106
3.0– 3.49	1	3	1	1	1	2	6	1	1	18	35
3.5– 3.99	0	0	0	0	1	1	3	0	3	3	11
4.0– 4.99	1	0	0	0	0	0	2	2	0	1	6
5.0+	0	0	0	0	0	1	0	0	0	1	2
Unknown	11	8	5	1	2	5	39	0	5	25	101
Total	41	48	66	51	21	40	228	19	33	229	776
Mean Value	2.06	2.15	2.07	2.21	2.28	2.34	2.16	2.44	2.39	2.30	2.22
Standard Error of Mean	0.13	0.09	0.06	0.06	0.13	0.13	0.04	0.19	0.14	0.04	0.02
Standard Deviation	0.70	0.56	0.47	0.42	0.59	0.74	0.54	0.84	0.72	0.59	0.59
Median	2.00	2.14	2.11	2.23	2.22	2.24	2.12	2.22	2.38	2.24	2.18
						Colored					
<1.0	0	0	0	0	0	1	0	0	0	0	1
1.0– 1.49	3	1	1	1	0	1	4	0	1	2	14
1.5– 1.99	11	7	5	2	3	3	12	2	4	14	63
2.0– 2.49	10	8	11	15	5	7	41	7	7	31	142
2.5– 2.99	6	3	5	8	6	5	23	5	8	17	86
3.0– 3.49	0	1	0	3	0	3	11	1	3	21	43
3.5– 3.99	1	0	1	1	0	0	3	0	1	3	10
4.0– 4.99	0	0	0	1	0	0	0	0	0	1	2
5.0+	0	0	0	0	0	0	0	0	0	1	1
Unknown	3	4	3	0	1	2	4	0	0	6	23
Total	34	24	26	31	15	22	98	15	24	96	385
Mean Value	2.12	2.15	2.27	2.53	2.36	2.33	2.43	2.42	2.48	2.56	2.42
Standard Error of Mean	0.10	0.13	0.12	0.11	0.11	0.14	0.06	0.11	0.12	0.07	0.03
Standard Deviation	0.54	0.49	0.60	0.60	0.40	0.62	0.54	0.41	0.59	0.69	0.60
Median	2.08	2.13	2.25	2.42	2.40	2.36	2.38	2.40	2.50	2.47	2.36

* 25 Children under one year of age have been omitted
† M = Male; F = Female

normally low total serum proteins were found (32, or 3 per cent, in the entire group were below 6 gm. per 100 ml.), occurring in about 3 to 4 per cent of the various age and sex groups, except for white and colored children age 1 to 3 and colored girls 16 to 20 in whom it was 6.4, 12.9, and 8.3 per cent respectively (Table 3). However, serum *albumin* levels were below normal in a considerably larger number (Table 4). In 95, or 9 per cent of the entire group, the albumin was less than 4.0 gm. per 100 ml. These low values were more frequent in the colored than in the white subjects (13.1 and 6.9 per cent respectively), and the various age and sex groups showed rather striking differences. Serum albumin concentrations below 4 gm. per 100 ml. were not found or were infrequent in white and colored children below 13 years of age. The highest incidence was found in the colored girls 16 to 20 (29 per cent) and colored women 21+ (24 per cent). White females of the same age groups show 10 and 8 per cent respectively. An incidence of 5 to 14 per cent occurred in the white and colored males 13 to 15, 16 to 20, and 21+. In some of the groups the total numbers are somewhat small and in some the number of "unknown" is relatively quite large. In addition to those with clearly abnormally low values another considerable number had values at the border line (4.0 to 4.24 gm. per 100 ml.). The mean serum protein values however, were clearly in the normal range.

The distribution of serum globulin values is given in Table 5. Values less than 1 gm. per 100 ml. may well be errors. Concentration above 3 gm. per 100 ml. were found twice as frequently in the colored as in the whites.

DISCUSSION

These data show an intake of total protein below the recommended allowance of the Food and Nutrition Board * in a very considerable number of the subjects, with many below the generally accepted minimum for satisfactory protein nutrition under usual dietary conditions. Moreover, comparison with the mean total calories of these subjects suggests that the deficiency is greater than first appears. As is well known, the adequacy of the protein intake depends to a large extent on the total calories. In adults especially, rather low intakes of protein are adequate to maintain nitrogen balance, preserve nitrogen stores, and provide for adequate protein nutrition if a large calorie intake from other sources supplies all energy needs and protects protein from being burned as fuel. This assumes of course that unusual demands for protein do not exist (growth, disease, lactation, etc.). Furthermore, much of such minimal amounts of protein must be of high biologic value (animal protein). Neither condition is fulfilled in this instance. Deficiencies are found in the intake of calories, in the absolute sense as well as relative to the protein intake, and the intake of animal protein is low (less than 20 gm.) in a very considerable proportion of the subjects. As might be expected, the protein intake showed a close and direct relation to total calorie intake.

In spite of the apparently severe restrictions in the intake of protein, the number of subjects with abnormally low serum proteins is not very great. While a hypoalbuminemia in 9 per cent of the total population is significant and important, and an incidence of 15 to 30 per cent in certain age groups even more impressive, the serum protein values fail to reflect as great a deficiency of protein as appears from the dietary studies. This lack of correspondence is further shown by a failure to demonstrate any correlation be-

* National Research Council

tween the serum albumin levels and such factors as the total caloric intake, total protein intake, and animal protein intake.

Attention should be called to the different significance of total serum protein and serum albumin. Abnormally low albumins were found three times as often as abnormally low total protein. Total serum protein is the sum of the albumin and globulin fractions. Globulin is relatively much less affected by nutritional deficiencies than is albumin, but on the other hand, is more affected by such factors as infections, etc. Both globulin and albumin fractions have a *range* of normal concentration over which they vary but not necessarily in the same direction. Total protein likewise has a *range* of normal concentration. It is, therefore, possible to have an *abnormally low* albumin combined with a rather *high normal* globulin to give a normal total protein. This occurs rather frequently in mild nutritional hypoproteinemia, which makes it important to determine the protein fractions as well as total protein. In this survey 89 per cent of the instances of hypoalbuminemia were accompanied by *normal* total serum proteins. Had not protein fractions been determined these instances of hypoproteinemia (hypoalbuminemia) would have been missed. Because of this and because serum albumin more adequately reflects protein nutrition it can serve alone for the serum protein values in such surveys of nutrition.

There probably are several explanations for the failure to find a correlation between the serum protein (albumin) and relative and absolute intakes of protein. Serum protein values are not solely a function of protein intake, at least in the direction of greater concentrations. Serum albumin values tend to fall within a narrow normal range which is relatively unaffected by any except rather extensive variation in protein intake. This together with the inability to "break down" the values to a finer range and the relatively gross error in determinations of intake make it difficult to establish a close and direct correlation. Furthermore, serum protein values are subject to temporary variation having nothing to do with protein in the diet, the changes being sufficiently great to obscure any correlation within the range of usual normal values. Finally there is the matter of border line values and the protein reserve. Large numbers of the subjects had serum protein values close to the lower normal levels. In the absence of extra demands, normal or near normal levels may be maintained on rather small daily intakes of protein. Thus an appearance of normality is given. This constitutes however a reservoir of protein deficiency in a population, which becomes manifest under conditions of extra demand. Many of our subjects have customarily taken such a diet as is recorded here for years and their protein reserves often have been exhausted if one can judge from observations made in situations which make demands on the reserve, i. e., when they are ill.

It may of course be questioned whether the serum protein concentration is to be taken as an index of protein nutrition. If it is not, the lack of correlation between serum protein values and protein intake and the failure of the serum protein values to reflect to a greater degree the deficiency of intake would be well explained. It is well known that serum protein formation is affected by other factors. However, there is clear evidence experimentally at least, of a close relation between the dietary protein intake and the serum proteins. With severe restrictions the effect is manifest in the mass hypoproteinemia of populations (epidemic nutritional edema). In less severe and more chronic deficiencies

the factors of protein storage and the influence of other factors than protein deficiency must be considered in the interpretation of the data. If one may judge from clinical experience and the effects of more restricted dietaries on populations, a hypoproteinemia and especially a hypoalbuminemia may be taken as prima facie evidence of protein deficiency in studies of the nutrition of populations.

If this is true, the relation between the serum proteins and the history of edema and its actual presence on examination is important. Since this edema may be a result of hypoproteinemia and hence presumably an expression of protein deficiency, a rather close correspondence between edema and serum protein concentrations might be expected. As a matter of fact there was little relationship between the two. Only 12 of the 88 persons with a history of edema, 6 white and 6 colored, had serum albumin concentrations below the normal level (4 gm. per 100 ml.). Of the 37 subjects with actual edema at the time of examination only 5 had abnormally low serum albumin or total protein (in one the alubmin concentration is unknown). On the other hand, of the 95 persons with hypoalbuminemia only 11 had edema or a significant history of edema.

There are, however, excellent reasons for this failure of correlation other than a lack of significant relation between the serum protein concentration and protein nutrition. First, the lack of agreement between the concentration of serum albumin and a history of edema is of no significance. Such histories are relatively unreliable, and the period of the edema may have had no relation to the time when the serum protein concentration was determined. Second, there are other causes for edema than lowered serum proteins and these must be eliminated before edema can be ascribed solely to a hypoalbuminemia. Fortunately the methods used in the survey make it possible to detect such other causes of edema. Analysis of the 37 subjects with edema shows that of the 32 with normal serum proteins (albumin) all but 6 had a possible cause for the edema other than hypoalbuminemia, namely heart disease, including hypertension, renal disease, varicose veins, advanced age, etc. One of the 6 without such a possible cause had a concentration of total serum proteins barely within the normal range.

Finally, the failure of some with low serum proteins (albumin) to exhibit edema must be interpreted with due regard to the mechanism of the formation of edema in such cases. Although hypoproteinemia is the principal underlying cause for the edema, there are secondary factors which influence greatly the development of the edema and at certain concentrations of the serum proteins may determine whether edema will or will not occur (appear) and to what degree. Posture, tissue pressure, environmental temperature, and salt and water intake are such factors and at only slightly deficient concentrations of serum proteins in particular they may determine at a given time and in a given subject whether edema will occur or not. Certain of these factors operate in both directions. An increased water intake, for example, may precipitate edema at a level of plasma proteins which would otherwise not cause edema, while dehydration may prevent edema with proteins more severely subnormal. Analysis of the cases with hypoalbuminemia shows that in 85 of the 95 the concentration of albumin was only slightly below normal and was combined with a high normal (or in some instances an abnormally high globulin) to give a normal total protein. Calculation of the osmotic pressure in these cases.[8] shows that in most of them the colloid osmotic pressure was sufficiently high to

make the occurrence of edema unlikely. Therefore, although the hypoalbuminemia indicates a deficient protein nutrition it was not sufficient in many of the subjects to cause an edema under the circumstances existing at the time of the examination.

In general then it may be concluded that the presence of edema on physical examination, while it may indicate a hypoproteinemia and hence a state of protein deficiency, cannot be accepted as such in the assessment of nutrition of populations unless other possible or likely causes of edema are excluded. On the other hand, a hypoalbuminemia of moderate to slight degree may not result in and may not be revealed by edema in a considerable proportion of the subjects.

SUMMARY

The results of a survey of the nutrition of some 1,200 persons in a general rural population in middle Tennessee with respect to protein nutrition (dietary intake, physical examination, and serum proteins) are reported. Frequent and severe deficiencies in the intake of protein, greater in the Negroes, the females, and certain age groups were observed. There was a significant incidence of protein deficiency as manifested by a hypoalbuminemia (about 10 per cent in the entire population), but it was not as great as might have been expected on the basis of the dietary intake records. However, in some groups, notably colored females 16 and over, the incidence of hypoalbuminemia was very high, 24 to 29 per cent.

Edema was found on examination in a small number (about 3 per cent) but was often explainable by causes other than hypoproteinemia. No correlation was obtained between the dietary intake of calories or protein and the serum proteins. The significance of the results is discussed.

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Field Experience for Health Education Personnel*

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A LARGE part of the effort put into health education is spent in mass processes such as news releases, lectures, broadcasts, printed material, exhibits, and posters. While these are all important from the point of view of keeping the public informed and health conscious, large-scale changes in behavior do not follow. The best opportunities are provided when we find small groups of individuals brought together by a single purpose. Adequately conducted discussions with these small groups will uncover the past experiences which are the foundations of their opinions and prejudices. They will provide opportunities for the discussion of controversial issues and allow for presentation of factual material by class or educator. They should help the individual think his problems through, and influence him to act in such a manner that his health and the health of the community will be improved.

In many communities all of the official and voluntary health agencies, various men's and women's clubs, and organized groups such as labor unions are forming health councils so they will be better prepared and able to care for the health and welfare needs of the community. They realize that any program of health education must be planned around a study of the needs of the people and through these health councils, group needs may be considered. Health educators then can meet small homogeneous groups in their immediate neighborhoods. Through these health educators the desires of individuals may be presented to the health council for consideration, and community needs interpreted to the neighborhood groups.

Preparation of health educators must be given thoughtful consideration and critical analysis because of the great need to influence and mold public opinion at this time and the opportunities offered for preparing people to take part in planning community programs. Most schools and universities provide some courses which introduce the students to materials and methods in health education. They are designed to give health educators a working knowledge of available material.

In some of the courses a study is made of methods of presentation to different age, racial, or nationality groups; the development of some criteria for evaluating health information and materials; and consideration of measures for judging the results of health teaching. Sometimes these courses or allied courses cover more in detail methods of conducting group discussions; talks are planned and practice is experienced within the group. There is little opportunity, however, for field experience under supervision.

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It was in response to this need that the Detroit Department of Health agreed to coöperate with Wayne University to provide the necessary field experience, training, and supervision. The Director of Public Health Nursing at Wayne University, and the Director of Nursing, and the Director of Health Education for the Department of Health planned the program. The course in Materials and Methods given at Wayne University is essentially the same as the methods course described above. This is a prerequisite to the course in field observation and practice teaching which will now be described.

The objectives for the field course are:

1. To acquire understanding and skill in handling group discussions effectively
2. To organize a teaching unit that will be use
3. To achieve ability to plan objectives for different learning situations and to understand what activities will tend to produce said objectives
4. To understand the needs of each group as well as the individuals in the group and to suit material to needs
5. To gain confidence in one's own ability to teach through practice in teaching under guidance
6. To gain knowledge of how to find, evaluate, and use factual material

The term educator as used here will mean the nurse, teacher, or community leader who is taking the course in preparation for teaching. The individuals this educator expects to have in future classes will be called students.

The course consists of eight 2 hour meetings with the instructor, four observations of group discussions conducted by qualified persons, writing of six discussion plans which are analyzed and corrected by the instructor, and finally conducting group discussions under supervision using these plans as a guide.

During the eight 2 hour meetings, the educators select a unit of learning. The expression "unit" implies wholeness or unity. It should present a unified experience which will give the student an understanding and control of a type of life situation. Each unit is broken down into as many separate parts as necessary for each to be easily understood and for all phases of the problem to be presented for discussion during the discussion period. Each part however should be a whole or total experience.

The educator, for example, may select for a unit of learning "Maternal Health." The parts could be:

First Discussion: How a baby develops in utero

Second Discussion: Why the expectant mother should see the doctor early in pregnancy

Third Discussion: Food needs of the expectant mother

Fourth Discussion: Healthful living during pregnancy

Fifth Discussion: What to do if the baby arrives early

Sixth Discussion: After the baby comes

After the educator has selected the unit of work, she will have to plan the objectives. There will be overall or central objectives for each unit and immediate or contributory objectives for each meeting. The objectives depend upon the needs, interests, and previous experiences of the students. The objectives are achieved if the discussions give the students knowledge, skills, abilities, or understanding to help them solve their problems. The educator may formulate objectives according to a student's needs, but they must be the result of some expression of desire on the part of the student and as such acceptable to her.

The educator should have a discussion plan prepared for each meeting. This is to help the educator ascertain if all the material is covered in the best possible manner and if it is going to meet the needs of the group. The discussion should be headed by the im-

mediate objectives. The body of the plan consists of subject matter, questions, and activities. All factual material should be included under subject matter. Statements should be briefly and simply stated so the educator may refresh her memory by a glance at the plan. Thought should be given to the type of questions to be asked to stimulate the desired response. They should promote thinking, provoke discussion, and at the same time bring out the theme of the lesson. The student must do certain things to bring about a change in behavior. These things we call activities. Problems and activities should challenge the student. They may consist of such learning experience as listening, enjoying, writing, reading, discussing, demonstrating, interviewing, going on excursions, or reporting. Because of activities the student gains a greater knowledge of the topic under discussion. They also should help her to develop some skill or ability to use her knowledge.

A great deal of material has to be covered to give the educator the background of facts and figures she will want and need. Each educator makes a bibliography of all the references used in preparation of the unit, giving title, author, publisher, date of publication, and pages. Knowledge of author helps to evaluate the material and a complete bibliography will be an aid when there is need to check a statement or when challenged for authenticity.

The work put into the discussion plans is for the purpose of achieving certain objectives. Evaluation and accomplishment can be determined to some extent by examinations, review, return demonstrations, and especially by new or changed attitudes as noted in discussion or practised by the group.

The eight class meetings then should help the educator conduct good group discussions by making her familiar with the following:

Selection of a unit
Suitable objectives
Helpful procedures
Reliable references
Evaluation of results

Practice teaching is usually done in the clinics or in a community center where the group has already been organized by an experienced person. The educators teach six classes under supervision. Every class is not supervised, but as many as necessary to evaluate her ability. The director or supervisor of the center where the educator is to teach is familiar with the course content and objectives and she usually observes the first two lessons. She does this to help the educator orientate herself, to familiarize her with the program of the center, and especially to give her an understanding of the people, their needs and problems. The supervisor does not criticise methods of teaching or lesson content. In this way the educator will have time to gain poise and confidence before she is observed by those who may be more critical of her methods.

Usually the other four lessons are supervised by the course instructor. The director of public health nursing may observe or the director of health education for the department of health. If the classes deal with a special subject such as maternal or child health the director of child welfare may supervise some classes. Most of the courses already planned and carried out have contained one lesson on nutrition and the head of that division observes when that discussion is held.

Consideration is given not only to how the educator conducts the class but to the surroundings: Where is the class held? Have arrangements been made for some privacy? What visual material is used in form of posters and printed material? Will there be freedom from interruptions? In other words, does the environment

have an air of welcome and comfort that will encourage informal discussion? These features are discussed with the educator before or after class because they should have been a part of her preparation.

The educators have a number of books and pamphlets available at each meeting with which the class members can become familiar and which they can order if they desire. When enough copies are available some of the class members take a book home and make a report at a future meeting. References are selected with the intelligence, abilities, and needs of the group in mind.

Educators prepared with this practical experience will have a better appreciation of the basic needs and wants of individuals. Understanding these needs they will be better able to conduct discussions which will bring forth individual problems. Individual problems are usually interrelated and in turn closely connected with community health problems. When persons realize this they are more willing to work together for the good of all. This is a valuable contribution to the total community health program.

Educators will have some experience in applying the essentials and principles expounded by Overstreet,[1] Mueller,[2] Bryson,[3] and Nash.[4] Just as it is necessary to know the basic needs and wants of individuals, so it is important to know when they are most receptive to suggestions and will more readily translate these suggestions into action. Nash in *Teachable Moments*, says, "The objective of all teaching regarding a subject is doing something about it. Information may be translated into behavior more easily when an individual has the power and the opportunity to act in behalf of himself or his family. The guidance must come from experts."

Teaching six lessons will not make an expert of these educators, but it will provide them with some technics which will be most helpful and practice will help to perfect these.

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Dehydration Procedures and Their Effect on Vitamin Retention*

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THE term "dehydration," by strict definition, means the removal of water, regardless of the method applied. At the present time, according to general usage, the term is applied to processes by which the normal content of water in foods is reduced to approximately 5 per cent. At such low concentrations of water, foods will generally keep over considerable periods of time. This fact has been known from time immemorial, and as far back as written records go references are found of the preservation of dates, figs, and other fruits solely by sun drying. Our Western Indians and those in southern South America preserved meats by an air drying process. The flavor and texture of meats so preserved would not appeal to a connoisseur, but they did provide their users with an easily portable form of animal protein and one which could be preserved for extensive periods of time. It seems probable that few if any of the vegetables could be satisfactorily preserved solely by sun or air drying, since, in general, they would decompose before the moisture was reduced to a point where such decomposition could not take place.

In the making of both butter and cheese, the moisture content of milk is reduced and the preservation of these products can be attributed, at least in part, to dehydration. Except for the Chinese method of keeping eggs by the use of lime, our older methods of egg preservation, such as they were, did not involve dehydration as an important factor. In more recent years, however, whole eggs, egg white, and egg yolk have been preserved by dehydration, and a large-scale industry is now in existence.

Many conditions brought about by the war have forced the application of dehydration as a method of preservation. The primary advantages of such a method are many. In the first place, weight can be reduced by approximately 90 per cent in the case of vegetables and by about 70 per cent in the case of most of the other foods. Without using compression on the dried products, the volume reduction of the dried product, as compared with the raw product, is not as great as the weight reduction, but it is still sufficiently large to warrant dehydration. If compression is used, much larger reductions in space can be obtained. Just how to obtain the compression of many products without injuring their quality is not yet known, but as an example of the possibilities, I might say that I have recently seen 5 lbs. of dried vegetables in a No. 10 can. Assuming a 10 to 1 drying ratio, this is equivalent to approximately 50 lbs. of the fresh vegetables, or roughly, one bushel. The

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packaging of dehydrated foods permits either the use of much smaller amounts of metal, if cans are to be used, or the possible elimination of metal containers and the substitution therefor of various combinations of sheets of glassine, cellophane, kraft or other papers, and possibly other plastic materials not yet in production.

As in the case of canning and quick-freezing, if a really high grade product is to be obtained, the manufacturer must go all the way back to the field where the crops are produced. The selection of varieties for a given area, which will dehydrate satisfactorily, is important. Harvesting obviously must be done at a predetermined stage of maturity. Once harvested, delays in all operations must be reduced to a minimum, although for root crops, such as potatoes, carrots, and beets, this speed is not so essential as it is for spinach, string beans, corn, and peas. Even in the case of the root crops, however, there is a limit to the period during which they should be held in storage.

On arrival at the dehydration plant, the products to be dried must be given essentially the same preparation as for canning or quick-freezing. These operations include washing, sorting, grading, peeling, coring, cutting or slicing and, finally, blanching. After these necessary operations have been completed, the actual drying is begun. Any one of a large number of methods can be used for the dehydration, but most frequently either tunnels or cabinets are used.

The drying operation is carried out until the moisture is reduced to the amounts permitted by the various specifications applicable to a given material. Having reached this stage of drying, the product is ready to be packaged.

If the whole operation of the production of dehydrated foods is considered as 100, this total is made up of preparation, 40; drying, 20; and packaging, 40. Expressed in another way, the preparation of the raw product and the maintenance of the qualities of the finished products are of about equal importance, and each is considerably more important than the actual method of dehydration used.

I have made brief reference to the several preliminary preparation operations. With the possible exception of blanching, the terms used, I believe, are self-explanatory. The operation of blanching consists of heating the raw product by immersion in hot water, by steam or by other methods, as may be necessary. The purpose of the blanching is to inactivate the enzyme system present, to set or hold the original colors in many cases, and to facilitate both dehydration and rehydration. There has probably been more discussion over the most suitable method of blanching than over any other operation. Experimental work carried on in the Bureau of Agricultural Chemistry and Engineering has shown that there is much less loss of ascorbic acid where steam is used for blanching than when hot water is used. The respective percentages of losses with these two treatments are as follows:

	Steam Blanching *Per cent*	*Water Blanching* *Per cent*
Kale	19	23
Beets	14	36
Potatoes	22	37
Cabbage	14	51

It has been suggested that by using the same water for blanching over and over again, only maintaining a fixed density, these losses might be reduced. Experimentally, our investigators have found that this is not the case.

To blanch satisfactorily with steam, it is essential to have sufficient steam to raise the temperature of the product to approximately 190° in about 1½ minutes, and it is rarely necessary to

extend the blanching time for more than 5 or 6 minutes. Ideally, the blanching should follow immediately after the other preliminary treatments, but where this is impossible, losses of ascorbic acid can be reduced by holding the unblanched material in a dilute salt solution. This practice, however, is not recommended and is condoned only under abnormal conditions which obviously will occur from time to time in any factory.

The following figures, based upon a number of determinations, indicate the vitamin C losses which occur as a result of steam blanching:

	Per cent Losses
Beets	14.8
Cabbage	18.3
Carrots	35.8
Kale	19.7
Mustard Greens	24.1
White Potatoes	22.5

Raw products from other sources than those used and other blanching methods will probably produce somewhat diverse figures, but these can safely be taken as a guide to average practices.

Without discounting at all the importance of the vitamin requirements of the human body, I might say that our experimental work has been directed toward the production of palatable, attractive foods and that the edibility of the product has been the main criterion of the success of our methods. Existing specifications do not call for any definite vitamin content of the dehydrated products. Because there are such wide variations in the vitamin content of the raw products, specifications based upon the known averages would be impractical. As an example of this, I might cite a case which occurred in our investigational work where spinach from two adjacent fields showed, respectively, 3 and 100 mg. of ascorbic acid per 100 gm. At the present time we are unable to give any reason for this enormous variation. In another case, a lot of cabbage purchased for experimental drying was found to have practically no measurable content of ascorbic acid, although the general appearance of the cabbage was excellent and there was no reason to believe that the product had been subjected to any unusual or abnormal storage or other treatment.

I might say that our experimental work was undertaken to develop dehydration methods applicable to the foods in which the armed forces were particularly interested. These consisted of white potatoes, sweet potatoes, cabbage, carrots, onions, beets, and rutabagas. It will be noted that, with the exception of carrots and beets, none of these products is ordinarly canned and of the total production of beets and carrots, only a comparatively small proportion is canned under normal conditions.

I have called attention to the fact that the methods of dehydration are of less importance than the other fundamental factors incident to the production of dehydrated foods. I have also stated that the commonly used dehydration equipment is either the tunnel or the cabinet. I think that you may be interested in knowing more regarding the actual dehydration equipment.

The simplest form of dehydrator is the cabinet. This consists of a box-like room in which it is possible to control temperature, relative humidity, air volume, and air velocity. The properly prepared material is placed upon trays at a loading rate not to exceed 1½ lbs. per sq. ft. Generally, the trays are stacked one above the other on a truck, and the truck pushed into the cabinet. After the doors are closed, the fans are turned on and the air current forced through steam radiators. When the operation first begins, quite high temperatures can be maintained on both wet and dry bulb thermom-

eters, for while in the wet condition, the product cannot be overheated and if the difference between the wet and dry bulb thermometers is not too great, hardening of the surface of the drying material will not occur. As the operation continues and the moisture is removed, it is necessary to reduce the temperatures quite a considerable degree. For each product there is a critical temperature which must not be exceeded when the product is dry. The critical temperatures run from about 135° to as high as 165° F. for most vegetables. The cabinet drier is not an efficient drying machine, but it has the virtue of being flexible though it must be operated on a batch cycle. It is not, therefore, essential to keep the factory operating 24 hours a day with all the disadvantages, particularly of obtaining labor, that such a type of operation entails.

For larger scale and continuous operations, the tunnel type drier is generally used. This is essentially an extension of the cabinet type in that, instead of one or two trucks each bearing 25 trays, there is sufficient length for 10 to perhaps 15 trucks. The same necessity exists for the control of temperature, relative humidity, air velocity, and air volume. Three types of tunnels are in use. They are known, respectively, as the parallel flow, the counterflow, and the center exhaust tunnels. In the first type, the hot air and the wet product enter at the same end of the tunnel; in the second case, the hottest, driest air meets the dried product coming out of the tunnel; and in the third, hot air, although at different temperatures, is introduced at both ends of the tunnel and is taken out in the center. There are advantages in both the parallel and counterflow types, and those advantages are used in the center exhaust type. Our engineers, and many of the other engineers in this field of activity, believe that the center exhaust type is the most satisfactory, both as to its efficiency and the quality of the products obtained.

There have been introduced recently, but not yet given thorough trials, a number of other types of driers. Among these I might mention the continuous belt type for which large production capacity is claimed. A number of vacuum driers have been invented and a few seem to have merit, although in all cases the amount of metal required is large. For milk and eggs, the spray type of drier is the conventional one. In this operation, the liquid (after some condensation in the case of milk) is sprayed in at the top of a tall chamber and there meets a rising column of warm or hot air. By virtue of the rapid evaporation, the temperature of the product is not raised, although by the time it reaches the bottom of the chamber practically all of the moisture has been removed. Such a process, obviously, will produce only a powdery output. The various types of heated drums can be used for drying liquids. For some purposes they are quite satisfactory, but in all cases the dried product has no definite shape.

I believe it is rather obvious that any method of food preservation necessarily results in the loss of some of the original vitamin content. Our experimental work has extended into the field of packaging and storage. We have found that the vitamin losses in storage may be equal to, or even larger than, those incident to the preparation and dehydration of the various products. Part of the losses in storage are due to the effect of oxygen and part to the effect of moisture. We are definitely sure that there is a close relation between the amount of moisture in the product and the rate of vitamin destruction and the development of abnormal colors and flavors. Present specifications for dehydrated vegetables

permit from 4 to 6 per cent of moisture, except in the case of riced or precooked potatoes where a 7 per cent moisture content is permitted. We have many indications that with lower moisture contents than those now provided, storage life may be extended, and it is more than probable that the existing specifications will be changed in this regard.

The necessity of keeping dehydrated products dry brings us to the question of packaging. The standard tin can probably represents the ideal package. This can be varied in size to meet the needs of the household or the needs of the mess cook who prepares food for standard units of around 100 men. Under normal conditions we would look no further than a tin can for a satisfactory package. However, these are not normal conditions. You, of course, know that only about 1½ per cent of the "tin can" is tin, the rest being sheet steel. We have now more demands for steel than our mills can supply and, so far as possible, attempts are being made to use materials other than steel for food packaging.

Dehydrated foods can be packaged in non-metallic containers, since they are not subjected to the conditions which in a cannery require the use either of tin cans or glass containers.

The ideal package for dehydrated products must be moisture-proof, moisture-vapor-proof, insect-proof, and rodent-proof. The first two conditions can be fairly well obtained, and the third can be approximated by the use of certain non-metallic packages. As far as rodents are concerned, something other than the package itself must be used to give the necessary protection.

Some idea of the magnitude of the problem may be obtained by considering the conditions under which army supplies may be stored. These range from temperatures in the interior of Russia and Alaska of perhaps 40° below zero to those of the Sahara Desert, and with humidities ranging from practically zero to 100 per cent saturation. A large amount of experimental work is going on not only in our laboratories, but elsewhere, to determine what packages can be obtained or devised that will adequately protect their contents under such wide ranges of conditions.

It has been noted that there is a close relation between deterioration and moisture content. If we start with a dehydrated food of 5 per cent moisture content, we believe that the product will be usable for one year if not more than 2 per cent moisture is added during the storage period. This gives us a fundamental requirement of the package in terms of water-vapor transmission. It is not safe to say that because a fresh sheet of packaging material transmits moisture at a low rate, a bag or package made from this same material will have the same water-vapor transmission characteristics. This fact is frequently overlooked in comparing packaging materials.

Since the subject of my talk deals with vitamins, I suppose I should not bring into the discussion the matter of rancidity. This, however, is so important in connection with many, if not most, of the dehydrated foods that I shall discuss it to some extent. Rancidity has undoubtedly limited the production and use of dried whole milk. It is for this reason that practically all of the dried milk used is made from skim milk. Obviously, in the case of meat, and particularly pork, the possibility of rancidity development during the period between dehydration and use cannot be neglected. Just how great this danger is, we cannot say at the present time. It seems probable that eventually antioxidants must be used in order to hold the product in an edible condition for the time required. Rather unexpectedly we have found that the

development of rancidity is not an unusual occurrence in dehydrated vegetables. Ordinarily, we do not consider fat as an important constituent of vegetables, and this is quite correct, as rarely if ever does the fat content exceed 0.2 per cent. In the fresh vegetable, however, this is accompanied by some 85 per cent of moisture. When the moisture is reduced to 5 per cent, necessarily the percentage of fat increases inversely and many of the abnormal odors in dehydrated vegetables have been found to be confined to the ether extract and are organoleptically identical with the odors associated with normal fat rancidity.

E. M. Chace, of the Bureau of Agricultural Chemistry and Engineering, summarized the results of our vitamin and other investigations at the June meeting of the Institute of Food Technologists at Minneapolis. This summary, ACE-172, "The Present Status of Food Dehydration in the United States," has been mimeographed and is available upon request either to the Bureau in Washington or to Mr. Chace at the Western Regional Research Laboratory, Albany, Calif. I have refrained from giving a mass of statistical and other information regarding the fate of vitamins in dehydration because the work was already well presented in this summary.

In summation, I feel that as far as dehydration is concerned, accent must be put upon the word "food"; and I think of food as something attractive in appearance, color, flavor, and texture. It is something that a hungry man will eat and with which he will be satisfied. It is the job of the technician to produce foods which meet with these standards and at the same time to maintain, as far as possible, the vitamins, minerals, and other elements present in the raw products. To do this, he must operate at the highest possible speed, use the best known methods, and protect the product as well as he can with the packaging material available. No method of preservation will hold all of the desirable qualities of the fresh, raw product.

No matter how well the technologist does his job, there is no guarantee that vitamins, minerals, and other food elements will not be lost or wasted in the kitchens. In so far as the military uses are concerned, I hope, in fact I believe, that the cooks will be so instructed and supervised that the consumers will get all that is practically possible in the foods set before them. If it shall be found that the vitamin supplies are inadequate when dependence is placed upon the foods available, other methods of providing necessary vitamins are, and will be, available. It is our belief that properly prepared dehydrated foods will compare favorably with any others which might be available under the exigencies of military operations and possibly even with many of the so-called fresh products which are available to the housewife through the retail stores.

Losses of Vitamins Which May Occur during the Storage of Dehydrated Vegetables*†‡

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WHILE it is of great importance to produce dehydrated vegetables without marked loss of vitamins during preparation and dehydration, it is equally important to prevent considerable losses during the period between dehydration and consumption. During World War I millions of pounds of vegetables were dehydrated. When freshly dehydrated these products were palatable and possessed fair nutritive value, but, after being transported abroad, they were found to be markedly changed in palatability, odor, color, and vitamin content. In view of the fact that large quantities of vegetables are again being dehydrated for the use of our armies and our allies, it is of great importance to know whether or not these products will really retain their palatability and nutritive value during storage.

Since the last war, it has been found that both carotene and ascorbic acid are retained better in dehydrated vegetables if the enzymes of the vegetables are inactivated either by drying [1] at a sufficiently high temperature, or by precooking [2] the vegetables prior to dehydration. Precooking (blanching) of vegetables to be frozen has also been found necessary in order to obtain retention of these vitamins during cold storage.[3, 4] The U. S. Army specifications now require sufficient precooking of all vegetables (except onions) to inactivate peroxidase prior to dehydration.

The work reported in this paper was part of a study of the nutritive values of dehydrated vegetables carried out coöperatively with the U. S. Bureau of Home Economics, the New York State College of Home Economics, the University of California, and the University of Texas. The object of the particular study herein presented was to determine first what losses of carotene, thiamin, and ascorbic acid occur during the dehydration of cabbage, beets, rutabagas, and potatoes in a commercial plant in New York State, and second at what rate these vitamins may be lost during subsequent storage under various conditions.

ANALYTICAL METHODS

Moisture—Difficulties were encountered at the start with as simple a determination as moisture. Drying of the ground sample in a vacuum oven at 158° F. for 6 hours was soon found to be the only absolutely reliable method.

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Carotene—The method described by Zimmerman, Tressler, and Maynard [5] was employed.

Thiamin—The method of estimating thiamin used was the "Standard thiochrome assay for the determination of thiamin in cereal products" recommended by the Research Corporation Committee on the Thiochrome Method [6] as modified by Moyer and Tressler.[7]

Ascorbic Acid in Cabbage, Rutabagas, and Potatoes—The Bessey and King [8] procedure as modified by Mack and Tressler [9] was employed.

Ascorbic Acid in Beets—The electrometric titration method described by Kirk and Tressler [10] was used.

The Preparation of the Dehydrated Vegetables

The vegetable samples studied were taken at various stages in the process of dehydration at the Dry-Pack Corporation plant at Lyons, N. Y. A brief description of raw vegetables and of the treatment given them during processing follows:

Danish Ballhead cabbage from Wayne County, N. Y., which had been stored for about a month, was trimmed of outer leaves, cored, and then shredded as for sauerkraut. Without further treatment it was spread on stainless steel trays and dehydrated for about 4 hours in a current of warm air in a cabinet drier. Rutabaga turnips from the Province of Ontario were washed, then peeled and diced. The product was blanched for 2 minutes in water near the boiling point and then cooled in water for 2 minutes. After draining, the diced turnips were spread on trays and dehydrated in the same manner as the cabbage.

Beets grown near Alton, N. Y., which had been stored for approximately 2 months, were thoroughly washed, then cooked in boiling water until almost done. The cooked beets were peeled, trimmed, diced, and then spread on trays and dehydrated in the same manner as the cabbage.

Heavy Weight potatoes grown near Lyons, N. Y., which had been stored in a cellar for approximately 4 months, were washed, peeled in a potato peeler, again washed, shredded into small sticks of rectangular cross-section, which were blanched for approximately 2 minutes in water near the boiling point and then cooled with water in a rotating drum. The product was spread on trays and dehydrated as described for cabbage.

MOISTURE CONTENT OF THE DEHYDRATED VEGETABLES

The freshly dehydrated vegetables contained the following percentages of moisture:

	Per cent Moisture
Rutabagas	8.4
Beets	5.5
Cabbage	5.5
Potatoes	7.0

LOSSES OF VITAMINS DURING DEHYDRATION

The Danish Ballhead variety of cabbage is nearly white, except for the outer leaves which were discarded. Consequently, it was so low in carotene that the amount present was not determined. On a dry weight basis the fresh cabbage contained 5.92 μg. thiamin per gm., and 4.40 mg. ascorbic acid per gm. After dehydration the amounts found were 5.60 μg. thiamin and 3.56 mg. of ascorbic acid, indicating little loss of thiamin but approximately a 20 per cent loss of vitamin C.

The losses of carotene, thiamin, and ascorbic acid from rutabagas during preparation and dehydration are shown in Table 1. It will be noted that during blanching the losses of carotene, thiamin, and ascorbic acid were approximately 2, 17, and 22 per cent, re-

spectively. Dehydration itself caused little loss of carotene and thiamin. On the other hand, little ascorbic acid is left in the dehydrated turnip, 85 per cent being destroyed.

The beets were substantially cooked preparatory to dehydration. This caused a loss of approximately 16 per cent of the thiamin and about the same amount of ascorbic acid. Dicing and dehydration caused only a relatively small additional loss of thiamin and an additional 15 per cent loss of ascorbic acid (Table 2).

Potatoes * (Table 3) lost approximately one-third of their thiamin and 60 per cent of their ascorbic acid content during shredding and water blanching. No additional thiamin was lost during dehydration but the ascorbic acid content was nearly completely destroyed.

TABLE 1

Vitamin Content of Rutabagas Undergoing Dehydration
(Dry Matter Basis)

	Carotene * μg. per gm.	*Thiamin* μg. per gm.	*Ascorbic Acid* mg. per gm.
Fresh	39.6	7.07	3.16
After slicing	37.2	7.14	3.12
After blanching in boiling water	36.5	6.10	2.45
After dehydration	36.0	5.89	0.42

* Total carotenoids

TABLE 2

Vitamin Content of Beets Undergoing Dehydration
(Dry Matter Basis)

	Thiamin μg. per gm.	*Ascorbic Acid* mg. per gm.
Fresh	2.40	0.24
After precooking in boiling water	2.01	0.20
After slicing	2.03	0.20
After dehydration	1.93	0.17

* It should be noted that stored potatoes relatively low in vitamin C were used. If the freshly dug product had been used, the vitamin C content might have been higher.

TABLE 3

Vitamin Content of Potatoes Undergoing Dehydration
(Dry Matter Basis)

	Thiamin μg. per gm.	*Ascorbic Acid* mg. per gm.
Fresh	6.17	0.76
After shredding	6.28	0.56
After blanching in boiling water	4.19	0.30
After dehydration	4.75	trace

STORAGE STUDIES

Immediately upon receipt of each one of the samples of the dehydrated vegetables at the laboratory, it was packaged in three ways: (1) in tightly closed glass containers; (2) under carbon dioxide in tightly closed glass jars; (3) in either moisture-proof cellophane or pliofilm bags. One of each of these samples was stored at each of the following temperatures: –40° F., 33° F., 58° F., and 75° F. In the case of the samples held under carbon dioxide, the air was eliminated by slowly passing in carbon dioxide for 30 minutes through a tube reaching to the bottom of the jar.

The samples were analyzed monthly for ascorbic acid and quarterly for carotene and thiamin.

Regardless of the type of container or storage condition, none of the samples lost an appreciable amount of thiamin during the test periods of 3 or 4 months.

No one of the samples stored at –40° F. lost much carotene. At higher temperatures the loss was much more rapid (Figure 1). Storage under carbon dioxide reduced the loss of this vitamin; the advantages of storage under carbon dioxide were particularly noticeable at the highest temperature (75° F.).

No one of the samples of rutabagas (Table 4) or cabbage (Figure 2) lost much ascorbic acid during storage at –40° F. for 3 months. At higher tem-

FIGURE 1

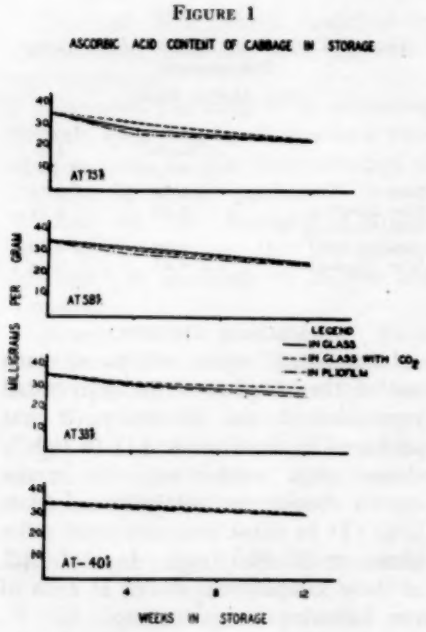
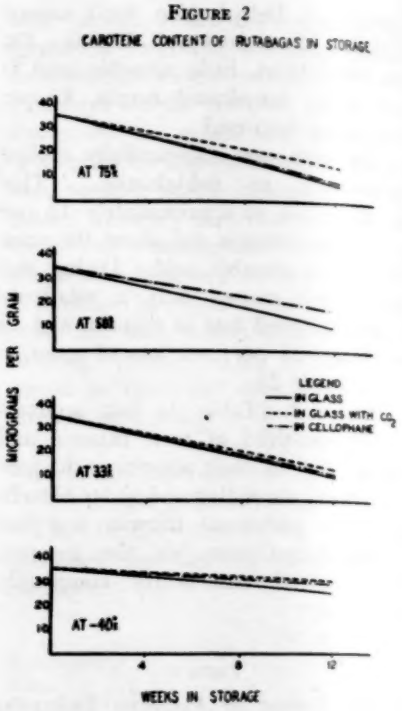


FIGURE 2



peratures, there was a considerable loss from all of the samples of these vegetables. In general, the higher the temperature the more rapid the loss, although there are some apparent discrepancies owing to the difficulty of obtaining truly representative samples. Storage under carbon dioxide seemed to have little effect in retarding the rate of loss of ascorbic acid from these vegetables.

It should be noted that these samples were relatively high in moisture. If dehydrated vegetables containing less moisture had been used, the rate of loss of carotene and ascorbic acid might have been lower.[11]

TABLE 4

Ascorbic Acid Content of Dehydrated Rutabagas during Storage

Period in Months	*Condition*	*Storage Temperatures*			
		−40° F.	*33° F.*	*58° F.*	*75° F.*
0	———	0.42	0.42	0.42	0.42
1	Air	0.32	0.47	0.28	0.36
	Cellophane	0.47	0.47	0.36	0.38
	CO_2	0.38	0.60	....	0.39
2	Air	0.27	0.45	0.43	0.26
	Cellophane	0.34	0.55	0.26	0.24
	CO_2	0.34	0.36	....	0.35
3	Air	0.38	0.35	0.37	0.31
	Cellophane	0.44	0.40	0.38	0.43
	CO_2	0.43	0.46	....	0.34
4	Air	0.41	0.21	0.18	0.16
	Cellophane	0.38	0.26	0.19	0.19
	CO_2	0.42	0.34	....	0.17

SUMMARY

The carotene, thiamin, and ascorbic acid contents of rutabagas, beets, cabbage and potatoes were followed during commercial dehydration and subsequent storage under controlled conditions. Prior to storage the dehydrated vegetables were packaged in three ways: (1) in glass containers, (2) under carbon dioxide in glass containers, (3) in either moisture-proof cellophane or pliofilm bags. Storage temperatures employed were (1) –40° F., (2) 33° F., (3) 58° F., and (4) 75° F.

Little carotent was lost from any of the vegetables during dehydration but the loss of this vitamin was relatively rapid at all storage temperatures above –40° F. Storage under carbon dioxide helped to prevent rapid loss.

Some thiamin is dissolved out during hot water blanching. Subsequent storage caused no further loss.

Potatoes lost nearly all of their ascorbic acid content during blanching in hot water and subsequent dehydration.

The fresh beets contained a relatively small amount of ascorbic acid. About one-third of this was lost during precooking and subsequent dehydration. The resultant product was not a good source of vitamin C.

Rutabagas lost approximately 85 per cent of their ascorbic acid during water blanching and dehydration. The remainder was fairly well retained at the lower storage temperatures but at either 58° F. or 75° F. more than half is lost in 4 months. Storage under carbon dioxide had little effect in retarding the rate of loss during storage.

Cabbage retained its vitamin C content better than any other vegetable during dehydration and subsequent storage. That tested was high in vitamin C containing more than 3 mg. ascorbic acid per gm. of dehydrated cabbage.

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Ultra-violet Irradiation as a Means of Disinfection of Air*

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THE bactericidal power of ultra-violet radiation has been known for many years. Careful studies on the wavelength dependence of this action of ultra-violet radiation established that the region of the spectrum in which waves are shorter than 3,000Å is quite efficient in the killing of microörganisms, and that bacteria and fungi show their highest sensitivity around 2,600Å. Preliminary studies on the effect of wavelength 2,537Å on certain animal viruses indicate that these viruses in a purified state have a sensitivity similar to bacteria at wavelength 2,537Å. The development of low pressure mercury vapor lamps with glass or quartz envelopes which emit about 80 per cent of their radiation at wavelength 2,537Å, very close to the maximum of highest bacterial sensitivity, has made available a ready and inexpensive means to be used for many practical purposes. This development coincided with the reawakening of interest in the control of air-borne contagion which was brought to the foreground in this country by W. F. Wells.

Although low pressure mercury vapor lamps have been used extensively in connection with air-borne microörganisms, it is only in the last three years that quantitative laboratory investigations on the efficiency of 2,537Å radiation on air-borne bacteria, under carefully controlled conditions, have been conducted. After the early work of Wells, the papers by Koller, Sharp, Luckiesh, and Holladay, and Rentschler and Nagy, have helped considerably to clarify some of the problems in connection with the killing of microörganisms in air. These and other studies have also helped to focus our attention on some of the important contradictions which have appeared in this field.

Fundamentally, a bacterium should have equal sensitivity whether it is on an agar surface, in liquid suspension, or floating in the air. The killing should depend only on the amount of bactericidal energy absorbed; of course the biological history of the organisms should be the same in regard to media, age, and other biological factors. However, a number of investigators have found that there are differences in sensitivity when bacteria are irradiated in a dry, or when irradiated in a humid atmosphere. These may be due to a number of factors, some of which we will discuss.

METHOD OF SAMPLING

Experiments were conducted at the National Institute of Health with a number of different sampling devices, i.e., open plate method, the Wells centrifuge, and the Hollaender-DallaValle funnel device. These tests showed that,

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depending on the humidity, dust content, and probably others factors, the different methods of sampling do not give necessarily parallel results. This appears reasonable if we follow the manner in which these devices remove bacteria from the atmosphere. The open plate method practically depends on gravity alone; the Wells centrifuge depends on moderate centrifugal force; and the funnel device emphasizes gravity through a strong impinging force.

There is very little doubt that similar factors which modify the sampling rate help also to modify probably the survival rate of the bacteria suspended in air when irradiated. This is, of course, very difficult to evaluate if we do not know the limitations of our sampling methods. It is urgently necessary to evaluate the different sampling devices and to establish the limitations of each.

CHANGE IN SENSITIVITY

Another factor which may contribute to the apparent variation of sensitivity in dry and humid atmospheres is the fact that bacteria which have survived exposure to ultra-violet radiation show less resistance to adverse conditions than normal bacteria, although this condition is more pronounced with bacteria irradiated with the very long ultra-violet. It may very well be possible that the dry atmosphere which is an unnatural medium for certain bacteria will enhance their ultra-violet sensitivity.

ADEQUATE IRRADIATION

The question of adequate irradiation of the air for the control of air-borne contagion has come up for consideration. It seems impossible at the present time to define quantitatively the radiation necessary to produce adequate disinfection. Several papers on this subject have appeared. The data in these reports are based on the lethal effects of ultra-violet radiation on "clean" bacteria sprayed into the atmosphere. Such data are very useful since they give us the minimum intensity which should be supplied if the conditions are ideal. The Council on Physical Therapy of the American Medical Association states in its acceptance of ultra-violet lamps for disinfecting purposes that "obviously the manufacturer and distributor of such lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air, and for the adequacy of the protection from injury of the occupants of the space irradiated." This is certainly a reasonable point of view.

TYPE OF INSTALLATION

The methods used in the control of air-borne contagion are usually the following:

1. *Irradiation of the upper one-third of the room*—In this case the lamps are placed so that the light is reflected to the ceiling. A certain amount of the light is reflected or scattered back into the lower level, depending on the arrangement of the lamps and the type of paint used on the ceiling and walls. Only the upper one-third of the room will receive enough bactericidal radiation to kill microörganisms within a reasonable time. One usually depends on natural circulation in the room or uses forced circulation to bring as often as possible all the air in the room to the bactericidal radiation. If the ceiling is high this may give quite an effective arrangement. Some of the most successful installations use this technic.

2. *The ultra-violet screen method*—This mode of control of air-borne contagion is used most extensively in hospitals. It is often installed across corridors or cubicles to control the circulation of bacteria. Successful installations for the control of air-borne contagion have been reported from

children's hospitals where such screens have been placed at the entrance of each cubicle. If the ultra-violet screens are used in hospital corridors across the passage from one part of the building to another, this method appears less promising. To kill organisms in the air passing through the screen, or especially on the clothing of nurses and physicians, the radiation would have to be so intense as to make it quite dangerous for persons to pass through such screens.

Another type of screen has been suggested which practically would surround the bed of each patient with ultra-violet curtains, or place ultra-violet curtains in the aisles between school benches. Such installations would appear to me to be rather dangerous to use since inadvertent exposures of exceedingly dangerous character could not be avoided.

3. *Irradiation of air in air ducts or in planeum*—In this type of installation, ultra-violet sources are located inside the air ducts or the planeum. Often the inside of the walls of the ducts are covered with ultra-violet reflecting paints in an effort to make best use of the radiation. Considerable work has been done in designing and testing such installations by a number of commercial laboratories. However, no actual epidemiological data seem to have been published on the reduction of air-borne infections in buildings with such equipment. It would appear that such installations are of considerable promise, especially in air-conditioned buildings, since they would avoid the exposure of the occupants to ultra-violet radiation.

PRECAUTIONS

The greatest danger involved in the use of bactericidal (2,537Å) radiation is the possibility of over-exposure. Very little is known about the effect of 2,537Å radiation on the eyes and skin of the occupants of the rooms. Most manufacturers supply some warning in regard to the use of these lamps. But in regard to some of the installations, we have observed that too little or no warning was given in regard to the dangers involved in extensive exposures of 2,537Å radiation. Time and again reports have appeared that workers in operating rooms, and other places equipped with 2,537Å lamps, have been adversely affected by this radiation. It also should be mentioned that many of the effects of ultra-violet appear not earlier than several hours after exposure.

Another point which should be emphasized is the production of ozone by these lamps. There seems to be no danger connected with this if the ventilation is good. However, if the air becomes stagnant and the lamps continue to burn, the concentration of ozone may reach toxic levels. Since there is very little information available on the toxic limits, or on methods of determining these limits, it would be very well if research on these problems were encouraged.

SCHOOLS

An outstanding study on the use of ultra-violet radiation in the control of air-borne contagion in schools has been described by Wells, Wells, and Wilder. Using similar installations, rooms in the Germantown Friends School and the Swarthmore Public School were equipped with low-pressure mercury-vapor lamps. These lamps irradiated the upper one-third to two-fifths of the school rooms, the radiation being reflected toward the ceiling. Only relatively little radiation comes to the level of the benches in these rooms. It would have been helpful had actual measurements been given.

These tests were conducted over a 4 year period at the Germantown School and for a 1 year period at the Swarth-

more School. Considerable decrease in mumps morbidity was noted in the irradiated rooms at the Germantown School. In both schools the incidence of measles in the irradiated rooms was considerably lower than in the rest of the schools during the 1941 measles epidemic.

As mentioned in the beginning of this discussion, more data are desirable in regard to the physical setup, intensity of radiation sources, and the effect on the children and teachers of the scattered ultra-violet and the peculiar blue light given by these lamps. Also, a survey of the natural bacterial population in control and irradiated rooms would have helped to understand these striking results.

HOSPITAL INSTALLATIONS

The danger of cross-infection which is always present even in the best conducted hospitals has made them a good proving ground for the usefulness of ultra-violet radiation in controlling air-borne contagion. Especially is this the case in children's hospitals. Many of the findings of recent experiences in this field are discussed in the volume *Aerobiology*. Good results were obtained at the Hospital for Sick Children in Toronto where respiratory infection was reduced from 40 per cent in the control rooms to 10 per cent in rooms irradiated with ultra-violet. Less convincing results were obtained at the Infants' Hospital in Boston using ultra-violet screens across the entrance to the cubicles. At the Home of Hebrew Infants in New York, the method of irradiating the upper one-third of the room was used to control air-borne contagion, and it was found that infection could be reduced by 50 per cent in rooms irradiated with ultra-violet. At the Cradle in Evanston the screen method of ultra-violet irradiation compared very well with mechanical barriers in the control of air-borne contagion from cubicle to cubicle. The article by Stokes and Henle on "Prevention of Epidemic Influenza," with a discussion of the usefulness of ultra-violet light in control of this virus disease is of interest. According to these writers, ultra-violet light compared very well with propylene glycol Aerosol.

Against these positive results there are very few negative reports. In none of the publications has mention been made of how much radiation the exposed persons have actually received. The Council of Physical Therapy of the American Medical Association has, in its acceptance of germicidal lamps for disinfecting purposes, given a very definite value of 5 ergs/cm^2/sec. for 8 hours exposure and 1 erg/cm^2/sec. for 24 hours exposure. Have these limits been kept in these installations? It is requisite that publications on this subject give data on the actual intensities used for disinfection of the air and the quantity of ultra-violet radiation to which the occupants are exposed.

The use of ultra-violet radiation in the control of air-borne microörganisms in operating rooms has been introduced by Hart. He reports that ultra-violet radiation (2,537Å) offers the simplest and most effective means of controlling air-borne wound infection. He especially emphasizes the protection of the personnel against over-exposure.

There are several investigations in progress on the usefulness of ultra-violet radiation in the control of air-borne contagion in crowded quarters. Since it usually takes several years to obtain reliable data in such investigations, it would be premature to discuss them.

There have also been reports upon the use of ultra-violet radiation in controlling bacteria and fungi in meat packing plants, instrument cabinets, etc. Most of these matters are still in a controversial stage.

CONCLUSIONS

We have in ultra-violet (2,537Å) radiation a highly effective tool for the killing of microörganisms. Since other living cells do not differ fundamentally from bacteria in their sensitivity, this radiation will affect other cells in about the same way it affects microörganisms. It will either kill them or damage them, modify them temporarily or change them permanently (genetically). It is essential that we become conscious of the danger of ultra-violet radiation if used carelessly. The practical application of light of wavelength 2,537Å will do no harm if fundamental precautions are taken to protect the uninformed person. The Council of Physical Therapy of the American Medical Association has given recommendations in connection with the acceptance of these lamps. In a review of the literature I find that little reference is made to the precautions suggested in this "acceptance," although not enough time has elapsed since its publication.

Among the problems in connection with ultra-violet radiation which need further laboratory study and clarification, are the following:

1. Reëvaluation of the sampling methods for air-borne organisms now in use, to establish their limitations and shortcomings, especially in regard to humidity, dust, etc., in an effort to improve them.

2. Requirements in regard to installation of 2,537Å lamps, especially with regard to those designed for the protection of the people exposed.

3. Evidence submitted in regard to the usefulness of ultra-violet radiation in control of air-borne contagion.

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Health Education in a Medium Urban Community*

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HEALTH education is a tool, like sanitation, immunization, law enforcement, or medical care. It is a medium through which health agencies attempt to prevent disease, lower the death rate, and increase the physical and mental vigor of the people they serve.

Mustard says that health education "is that process or those procedures through which, directly or indirectly, individuals who make up the public or a particular segment of the public are brought to a performance of those things believed to be beneficial to health, and to an abstinence from those things believed to be injurious to health." [1]

A successful public health program demands and receives the support of the people who benefit from it. Some departments of health have achieved outstanding success in all fields; other departments have attacked and conquered particular problems, one at a time, while conducting a general program.

Success or failure of a particular program depends upon the knowledge which the people have of its general objectives. The laity must know the potential resources for health in order to take an intelligent part in its acquisition and development. Furthermore, the desire for health implies the willingness to share in efforts to obtain it and to participate in the creation of individual and common resources for its protection and advancement in quality and quantity. To this end, the relevant facts of human life, the natural history of preventable diseases, of remediable and preventable defects, and the causes of premature death, as well as the record of progress for extension of the span of life must be widely understood, not only among public health workers but among the laity as well.

Building today upon the work of pioneers such as Sir Edwin Chadwick, Dr. John Snow, Hiram F. Mills, George W. Fuller, Earle B. Phelps among the sanitarians, and Koch, Pasteur, Stephen Smith, William H. Park, Theobald Smith among the bacteriologists and physicians, public health workers have reared a structure which has definite form and purpose and in which there is balance between the control of the environment and the promotion of individual hygiene.

The problem of the local health administrator is to build a well balanced and coördinated system of health service. The job cannot be done by the administrator himself; he may be ever so able a leader but, without the proper working tools, he can accomplish little. What then are these working tools? In

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my opinion the most important instrument for achieving success is personnel. By "personnel" is not meant mere office holders, but employees with adequate technical training and proven ability for the specific duties assigned to them. In other words, a local health department cannot be expected to accomplish a herculean task without securing the ablest talent the market affords.

The principles of organization and service in public health are the same regardless of whether the department serves a few thousand or several hundred thousand people. The health department which serves a county of 30,000 population will have a health officer and necessary nursing, inspection, and clerical personnel.

A properly organized local department of health serving a medium urban community will usually have essential bureaus or divisions manned by specialists in their particular fields. The health officer in conjunction with the chiefs of divisions should formulate the general policies, outline qualifications of personnel to be employed, indicate essential items in the program, and prepare the necessary manual of operation to be used in the promotion of public health. The general program should be submitted to the members of the board of health for their information and, if necessary, for their approval; in turn, it should reach the state health officer for his approval.

Since the local department of health is a definite entity and functions as such, monthly reports should be submitted to the state health department; these reports contain a summation of activities and accomplishments of the personnel. Special reports may also be submitted. These reports constitute a part of the material upon which the state department of health bases its work in education and they serve the local health department similarly as basic information for its educational work.

No longer can those who are interested in public health work entirely satisfy their communities or the art and science of preventive medicine through the traditional programs to control infectious diseases, to detect physical defects of school children, or to teach the health rules of nutrition, rest, and physical recreation. Health departments must serve as a potent influence to keep individual and community health operating at their highest level.

Nassau County, N. Y., is offered as an example of a medium urban community where what is hoped will be an effective health program is in its early stages. Nassau County is on Long Island, its western boundary line adjoining New York City, extending from Long Island Sound on the north to the Atlantic Ocean on the south, a distance of 23 miles. The county is 16 miles wide from the New York City boundary line on the west to Suffolk County on the east. It has a land area of 274.9 square miles.

The county seat is located at Mineola, in the approximate center of the county; component parts include 2 cities; 63 incorporated villages, and 3 townships. The population in 1900 was 55,689; in 1920 it was 126,120, and increased to 406,748 in 1940. Due to a marked increase in war industry it is believed the population now exceeds 450,000.

The county operates under the County Government Law of Nassau County, otherwise known as the Nassau County Charter. Prior to January 1, 1938, each city, incorporated village, and township had its own board of health and part-time health officer, a total of 68 uncoördinated health jurisdictions. These municipalities had, in addition, 11 public health nurses, 10 inspectors, and 7 stenographers and

clerks. The Public Health Committee supported by county tax funds had 6 public health nurses and attempted to carry on a county-wide service; due to limited personnel, major emphasis was placed on clinic and follow-up service.

In accordance with the provisions of Chapter IX of the Charter, Nassau County became a county health district, local boards of health were abolished and their powers and duties were transferred to the county department of health. A single board of health composed of 5 members appoints the commissioner who is the administrative head of the department and serves for a 6 year term. The Charter also transferred local health department employees to the county health department together with 37 part-time health officers who became deputies of the commissioner, serving until the respective terms expired for which they had been appointed. The last of such part-time deputies completed his term about 1½ years ago. Appointments of personnel since the inception of the department, other than the commissioner and deputy commissioner, have been subject to requirements of the Nassau County Civil Service Commission.[2]

Nassau County is in the New York City district of the New York State Department of Health and the services of the District Health Officer are continuously available for guidance and assistance. Since the county department of health has met all requirements of the State Department of Health, its expenditures are annually reimbursed in the amount of 50 per cent.

The department program is administered through 5 divisions, namely: Communicable Diseases, Sanitation, Public Health Nursing, Maternal and Child Health, and Statistics and Records. The department does not have a division of health education; this activity is directed by the commissioner.

Usual and accepted methods of health education were inaugurated when the department was organized in 1938; their expansion has paralleled that of the department.

Numerous less tangible but nevertheless important media of health education are inherent in health department organization. The degree to which they may be recognized as contributing to health education is dependent upon the quality and extent to which they are employed.

The epidemiologist has an excellent opportunity to give information to the public during his investigations, and also to render medical advisory assistance to the public health nurse and the sanitarian.

Public health physicians engaged in the administration of various services such as venereal disease, tuberculosis, and maternal and child health, act as a guide to both the medical and nursing professions as well as in the formulation of disease control and health education programs.

Among the various media, perhaps the most productive is the informal instruction given by the public health nurse through personal visits and group conferences. This statement is made with full appreciation of previously reported studies which have challenged the educational value of the nursing visit and is based upon two concrete factors: (1) the department policy of providing in-service training and experience for the staff nurse in each special field before full responsibility for instruction in that field is placed upon her, and (2) quick returns from nursing visits denoted by action on the part of those visited.

After 4½ years the department's nursing service is now generalized; complete generalization, however, was reached only as in-service training could be provided in the various services.

Prior to the transfer of tuberculosis

nursing service in 1939 from the Nassau County Sanatorium to the department of health a series of 17 carefully planned lectures on diagnosis, treatment, and control of the disease was given to the nurses by the superintendent of the sanatorium. These lectures were followed by a physical examination of each nurse in the outpatient clinic and a period for observation, including participation in the sanatorium program. Case summaries were prepared by the nurse formerly responsible for tuberculosis nursing; she then, in the capacity of consultant, gradually turned over the case load and assisted both supervisors and staff nurses alike in assuming full responsibility. Since the staggering case load formerly attempted by two nurses was spread among 33 nurses, results were immediate. Since that time, clinic attendance has continued to improve, many lost cases have been brought to light and new cases found.

A similar plan of training for the nursing staff was followed before the cancer nursing service was absorbed. The medical consultant of the Tumor Clinic assumed responsibility for a series of 19 lectures, for which he secured some of the best specialists in the county and in the metropolitan area. These lectures covered the general aspects of the problem, symptoms, diagnosis, surgery and the use of x-ray and radium. The last four lectures were on the general topic of "Cancer and the Community." The practical experience program included 8 days of planned observation and practice, the nurse being given an opportunity to become acquainted with tumor patients from her own district. Gradual transfer of the case load to the department of health by the Cancer Committee nurse was accomplished by use of a case summary sheet. Each case was discussed with the public health nurse by the nurse employed by the Cancer Committee, the latter thus becoming a consultant in cancer nursing.[3]

In further preparation for the maternity nursing service a course of 20 weekly 2 hour lectures and demonstrations in obstetrical nursing was arranged with Maternity Center Association of New York City. All members of the field nursing staff enrolled in and completed this special course, following which there was an immediate increase in standards and services in maternity nursing.

It is reasonable to expect a relatively high quality of instruction as a result of exposure to experiences provided through this particular pattern of staff education which included: (1) theoretical instruction regarding the scientific facts concerning the disease or condition; (2) observation of diagnostic, treatment, and control methods in special centers for care; (3) participation in the special center program to gain a complete understanding of all aspects of the disease or condition, and (4) immediate field experience under close supervision. This pattern followed in improving the quality of the various services mentioned is now in progress in orthopedics.

Other factors which influence the quality of instruction given by the public health nurse also include: (1) regular staff conferences, (2) participation in the student program, and (3) individual study program.

The three point staff conference program plan includes: (1) interpretation of new policies; (2) free discussion and group problem solving, and (3) formal presentation of current research, book reviews or other pertinent contributions in the health and medical fields. Formal presentations are arranged by a staff committee and may include discussions by some member of the group, by administrative personnel of the department of health, or by some individual outside the department of health

who has especial qualifications to make a contribution which will further enrich the background of the field nurse.

The department is fortunate in being recognized as a center for field experience for graduate students in public health nursing. The responsibility for interpreting field service to these advanced students is a constant stimulant to improve the teaching content of visits. The informal interchange of experience also offers an opportunity for further enrichment.

In the individual study program it is significant to note that during the past 4½ years, a staff increasing from 17 to 35 nurses, has through self-directed study taken 182 courses (for which they paid $3,788), involving 6,122 hours of their personal time, exclusive of travel and study. Five nurses have had extended periods of study, one completing degree requirements.

These means of improving the contribution of the public health nurse to the community health education programs have also been extended to nurses in all nonofficial agencies.

Because all members of the nursing staff are qualified civil service employees, have been given in-service training in special services, carry out a planned program of individual study, keep up-to-date through staff conferences, and receive individual help through supervision on the job, each nurse in her own right is actually a health educator and carries an effective health message into each home or place she visits.

Last year the nursing staff made approximately 35,000 visits. Although many of these were revisits, this represented the direct exposure of 48,600 Nassau County residents to some phase of health instruction but an unknown number of indirect contacts, and exclusive of the number attending clinics. Based upon the preparation of the nurse for her work and the apparent response of individuals to her visits, it is justifiable to recognize this volume of work as a distinct contribution to the community health education program.

A second medium of public health education is available through personnel dealing with sanitation, although to a lesser extent. The educational and police work of this group involves contact with a wide variety of problems and people. The limitations on the effectiveness of health education through this personnel is occasionally due to deficiencies of educational and technical training in the individual, which will of course be overcome in time as qualified personnel replace inherited and unqualified appointees.

Upon the formal establishment of the department's Division of Sanitation, a course of in-service training was instituted and carried on over a period of a year under the supervision of the director. This instruction served to acquaint the personnel with technics of their own duties and gave them a broader picture of public health work in general. This first course amounted to 100 hours of instructions and supervised field experience.

Subsequently those of the inspection staff who had adequate educational background completed a university course in food sanitation. Food inspection personnel have also participated in short courses given through the State Education Department and are regular attendants at conferences of food officials in the metropolitan area.

These representatives of the health department have in turn become better able to accomplish their objectives in the field which are basically educational and satisfying to the citizens contacted to the extent that they meet a need for service and information.

The extent of the type of this contact with the public is indicated by the more than 32,000 inspections and field

visits during 1941. The actual number of residents reached by this service is considerably greater than the number of inspections.

Exigencies of the war have brought group instruction to the front as a means of community health education to an extent heretofore unparalleled. The past year has afforded an opportunity to reach persons in all strata of society displaying an eagerness to learn. Organized groups of influential and economically independent citizens have invited department representatives to teach them facts regarding community health services and their utilization, as well as other factors that will contribute to healthful living. The administrative staff has become part of a county faculty which is constantly called upon to lecture to various groups in training for defense activities. During the past 9 months this service has included a total of 51 lectures.

In addition, staff nurses have taught 325 home nursing class sessions, 294 mother's class sessions, and 43 classes in first aid; total attendance for these 662 class sessions was 7,641 persons.

During the past summer a plan of group instruction was inaugurated among workers in defense schools and industries. To date, 32 sessions have had an attendance of 2,274 men and women. Instruction to industrial workers is planned in units of four lectures upon: personal health, community health, nutrition, and child care.

Through nursing and sanitation personnel and also including visits by epidemiologists and other department physicians it is believed that about one-fourth of the total population of Nassau County had some personal awareness of the department of health and its relation to their own health and well-being during the year 1941. This does not include but is supplemented by the dissemination of health information by other means previously referred to.

A third medium, that of department representation on a variety of community advisory boards and committees, provides opportunity for effectively reaching an influential group of citizens occupying key positions in bringing about changes in community thinking and action.

Administrative personnel of the department have continuously participated in the activities of such county organizations as the Nassau County Medical Society, The Nassau County Tuberculosis and Public Health Association, the Nassau County Cancer Committee, Nassau County Central Index, Nassau County School Health Council, Nassau County Public Health Nursing Council, Nassau County Chapter of the American Red Cross, Nassau County Nutrition Council, the Nassau-Suffolk Conference of Waterworks Superintendents, Long Island Section of the New York State Sewage Works Association, and public official groups such as building and zoning officials. More recently these activities have been extended and are included in connection with the Office of Civilian Protection of the Nassau County War Council.

Participation of this type not only affords face to face opportunities for health education but ties in the resources for these social and philanthropic organizations to the total community program.

SUMMARY

1. Nassau County is an urban community consisting of both thickly and sparsely settled communities and having a total population of about 450,000 persons.

2. Considering Nassau County as a medium urban community, the health education program is reviewed on the basis of 4½ years' work by a single county department of health.

3. Usual and accepted procedures in health education were adopted and have been used since the department was organized in March, 1938. In addition, certain routine functions of the department are considered from the standpoint of their relationship to health edu-

cation, particularly in the fields of epidemiology, nursing, and sanitation.

4. The effectiveness of these aids is dependent upon individual abilities based on prior education and in-service training and their spirit and attitude in personal contacts with the general population and various organizations.

5. The accomplishments of field personnel in health education are in turn dependent upon the stimulus of capable administrators.

6. The quality of health department service governs the extent to which other community agencies accept direction and participate in the organized health education program.

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SIR ARTHUR NEWSHOLME, K.C.B., M.D. (LOND.), F.R.C.P.

INFORMATION that Sir Arthur Newsholme had died was somewhat delayed in reaching the United States, but this does not dull the sense of loss which will be felt by those who knew him or knew of him. His acquaintanceship in the United States and Canada was wide, and his prestige rested upon a fine foundation of professional accomplishment and personal graciousness. It should be recorded that we, in America, regarded him as a great man; and for our American annals we can do no better than to re-publish the obituary notice that appeared in the *Lancet* of May 29, 1943, which is as follows:

"The death of Sir Arthur Newsholme on May 17 at the age of 86 removes a landmark in our national system of public health of which he was both the reformer and the chronicler. During those eleven crowded years in Whitehall when he was medical officer to the Local Government Board, before its absorption in the Ministry of Health, the emphasis shifted from sanitation to personal hygiene. He had a vision of human lives emancipated by their own effort and he set his course to provide the conditions of healthy living.

"Arthur Newsholme was born at Haworth, and his memories went back to the 'sixties and talks with people who had known the Brontes in that West Riding town. His mother was early left a widow and he won his way through school and college with the help of scholarships. After a year as apprentice to a Bradford practitioner he entered St. Thomas's Hospital at a time when surgery was coming to life in the carbolic spray, and where he listened to Sir John Simon's last lecture. Qualifying LSA in 1879 he was house-surgeon there and held other resident posts while he was taking the London MB with several honours and the gold medal in medicine, followed by similar distinctions at the MD examination. In 1883 he was appointed part-time MOH for Clapham where he had already been in successful general practice for two years, and in 1888 after taking the certificate in public health he became the first full-time MOH for Brighton (which had just been made a county borough) at a salary of 750 pounds. Here he spent the next twenty years, and his determination to get his principles of public health established in practice, based as it was on his own experience as family

doctor, soon won recognition. It was in Brighton in the year 1899 that the notification of tuberculosis (on a voluntary basis) began in this country and it was here too that serious research started into the aetiology of rheumatic fever, of diphtheria and of summer diarrhea. His demonstration that shellfish may convey typhoid brought him into conflict with interested parties. In the background were numerous mathematical excursions, following up his guide-book (Elements of Vital Statistics, 1889) and elaborating the 'fallacies of observation' and the 'fallacies of inference' on the avoidance of which his mind was keenly set. At the conclusion of this period the municipal council testified on vellum to 'the unstinted service by reason of which a continuous and progressive decline in the death-rate has been brought about.'

"His translation, in 1909, to the Local Government Board came about through the wisdom and on the personal decision of John Burns, a kindred spirit in many ways. With years of experience as MOH he was in a unique position to reconcile methods of local and central administration. Steadily, though not without heat and effort, Newsholme overcame the difficulties of an outsider entering the closed ring of Civil Service and piloted the expansion of our public health administration from a predominantly environmental service to a personal service of preventive medicine. On his initiative the anti-tuberculosis and maternity and child welfare activities developed from isolated local efforts to national schemes. In 1916, on the appearance of the report of the Royal Commission on Venereal Disease, he secured the prompt adoption of nearly all its recommendations. And these were only some of the directions in which his single-minded and virile will broke down resistance and implemented wise reforms. The position of independence in which medical officers of health now find themselves, and the resulting advance in public appreciation of health services, is due in large measure to his enthusiasm and example.

"Retirement from Whitehall in 1919 was not the end of his work but the beginning of a new phase. Invited by W. H. Welch to lead the new school of hygiene at Johns Hopkins he had a profound influence on American public health through professional and personal contacts with a new generation of public health officers. His American experience, his familiarity with our own system, and his visits on behalf of the Milbank Fund to European countries and especially to Russia (c.f. ***Red Medicine*** with J. A. Kingsbury, 1933) found expression in a series of 'International Studies on the Relation between the Private and Official Practice of Medicine,' written with the terse lucidity characteristic of all his reports. This experience and much else is embodied in two autobiographical volumes, ***Fifty Years in Public Health*** (1935), and ***The Last Thirty Years in Public Health*** (1936). His worth as an administrator was recognized by honours and responsibilities. He was made CB in 1912 and promoted KCB in 1917. He was president of the Society of MOHs. He sat as crown nominee on the General Medical Council from 1910 to 1919. He examined for the Universities of Oxford, Cambridge and London, and he was a member of the executive of the Imperial Cancer Research Fund.

"Of the manner of man behind this achievement a few words remain to be said. During the years of struggle when he was fighting against obstruction and inertia his critical mind and caustic tongue were sometimes more evident than his generous heart, though generosity of temper and of purse was always near the surface. He had the Yorkshireman's canny delight in a good bargain, as well as some of his bias towards the material side of human welfare. His last ten

years were clouded by the loss of his wife after fifty years of close companionship. But he had his library and his garden, and in his determined maintenance of interest in his fellows he triumphed over bereavement. The Worthington Council of Social Service had won his warm support. During this time too he made many new friends who could testify to unobtrusive acts of kindness, to his invincible cheerfulness, to his alertness of mind, and above all to the transparent goodness which was manifest in him."

STUDENT WAR NURSING RESERVE

LAST October we got a little wrought up over the need for nurses and wrote an editorial about it. The editorial was not released for we were told by colleagues that the situation was very delicate, that brains much better than the Editor's were at work on the subject, and that the then current plans were of the nature of a military secret.

Since that time the typescript of the editorial in question has remained in the Editor's gestation barrel. In the light of recent events, however, it is now brought forward as a springboard for further observations. This is it:

"Thoughtful persons, both professional and lay, are becoming increasingly concerned with the nursing situation. Only the most optimistic can foresee, for the future, a supply of nurses sufficient to meet military and civilian needs. Those in the nursing field have attempted in various ways to solve the problem but the outlook remains disquieting. Because of limitations in numbers, in training, and in availability after training, the Red Cross Nurses Aids, recruited essentially from women of leisure, cannot meet the demands. Federal subsidies made to nursing schools, in order to permit them to take a larger number of students, have helped to some extent but not enough. Publicity and various local efforts to persuade young women to enter nursing schools have been only partially successful and there still remains as a bleak outlook a probable shortage of nursing care before the war comes to a close.

"This lack of success inclines one to wonder if possibly nursing is still cruising on the fat white ocean-liner of peace rather than driving forward on the lean ship-of-war. Today, the recruiting of man and woman power is highly competitive, and success appears to depend upon how completely the opportunities offered meet the psychological demands and the income necessities of those to whom the appeal is directed. There seems no likelihood that the WAACS and the WAVES will be unable, in spite of high standards, to fill their ranks with ease. And why? Because they offer to young women the opportunity of entering immediately into a service which is recognized as an integral part of the military effort. They pay her while she is being trained, and most of all they put her into a snappy, and official military uniform, which indicates to relatives, friends, acquaintances, and photographers that she belongs; that she occupies a glamorous place in the national war effort. As against this, the recruitment of students for nursing schools stands not much chance. It is essentially on the negative side. The high school graduate and young college-woman is approached on the basis of local hospital needs, or at least largely in terms of civilian needs. She is asked to undertake a course of training of nearly three years, during which time she sinks into anonymity so far as the war is concerned, and, except for her

board and keep, is expected to do this for nothing, which frequently she cannot afford to do.

"In the circumstances, might it not be well to consider making the appeal for student nurses on a realistic basis. Might it not be worth while, over and above routine recruitment for local needs, to consider the establishment of a WA—Corps for student nurses enrolled for future service with the Army or Navy. If such a corps were established, put in an off duty, official military uniform designed by a topflight coutourier, if that corps were disciplined to an alert esprit, detailed to regular nursing schools for training, paid as other students undergoing military training are paid—if these things were done and supported with national publicity, it is quite possible that the whole picture would change overnight. Another possibility to be considered, too, in spite of the fact that it will strike horror into the hearts of some of the leaders of nursing, is that perhaps in addition to commissioned nurses, there should evolve for military purposes a new type of Nurse's Aide, to become, possibly, sergeants in the nurse corps, *Military Nurses*, who conceivably could be given nurse's training rather than nurse's education, and who might complete such training in a time much shorter than that now required for the graduate nurse."

The Bolton-Bailey Act recently passed by Congress provides many of the elements recommended above. A Student War Nursing Reserve is set up in the Public Health Service (it is unfortunate that the initials do not spell anything); a uniform is to be provided and the student will be paid a stipend. It is on the latter point that we are apprehensive. According to an announcement in the June 11 issue of the *Public Health Reports*, this stipend will begin around $15 a month and terminate at an amount not less than $30 a month. It is difficult to understand why it must be so low. There seems to be nothing in the Constitution of the United States that makes it illegal to pay student nurses on a basis equal to that paid other students in training for war work. In medicine there are many applicants for each opening in a medical school and the student-soldier gets room and board and $50 a month. In nursing where the number of applicants is alarmingly scant, it is not likely that $15 to $30 a month will stand up against the competition of business and industry or the intriguing military services which young women have a chance to enter. The mere fact that the United States of America sets such a low rate of pay for the student War Nursing Reserve is more than likely to cause young women to regard it as correspondingly less important than the other services.

And now, one final word to the Surgeon General: Dr. Parran, you watch your step about that uniform! If this matter were male and epidemiological, suggestions would be superfluous. But it is neither of those things. On the contrary, it is so female that it is ethereal—an ethereal salt of glycerol, the principal ingredient of dynamite. In handling this stuff you will need advice, and how you will need it. The consultant you want, however, is not in your Service, has no honorary degrees. The address is Fifth Avenue.

LETTER TO THE EDITOR

ALTHOUGH the discussion of H. M. C. Luykx' letter which appeared in the April issue of the JOURNAL aroused a good deal of interest, it was not planned to publish any further comments on the subject. However, on receipt of the communication presented below, the Editor changed his mind, for the point which Dr. Lumsden makes is of the nature of a basic principle, and to the general effect that a biostatistical chain is no stronger than its weakest epidemiological link.

TO THE EDITOR:

The outbreak of letters to the Editor appearing in the April and May (1943) issues of the JOURNAL regarding the application of statistical technics or methodology to some figures in an article on The Incubation Period in Epidemic Poliomyelitis, by Dr. Albert E. Casey, in the *J.A.M.A.* (120, 11: 805) of November 14, 1942, seems to warrant a letter to the Editor on the practical aspect of the basic matter.

To working epidemiologists and others in public health practice it is of no practical importance whether the ± or standard deviation or probable error in the mean or average incubation period, as calculated by Dr. Casey apparently on a speculative or at most a hypothetical basis, was 1.6 or 1.1 or more or less or whatever, if any. Dr. Casey does not know, and the means were not and are not at hand to determine, whether there were any truly secondary cases in the series. As is indicated by Dr. Casey in the first paragraph of his article, we do not know the mode or modes of spread of poliomyelitis infection. A later case among contacts of an earlier case does not mean necessarily that the infection has passed from the one to the other. It is barely possible that figuring incubation periods of poliomyelitis on a basis of exposure through personal contact is as erroneous as it would be to figure that of bubonic plague, malaria, or yellow fever on a similar basis. In intensive outbreaks in limited areas many strict coincidences having no real bearing on the causation of the disease may be found and be built up into elaborate and, unfortunately, misleading hypotheses or even doctrines, by single-minded investigators.

To some of the observers, including myself, the most striking epidemiological feature of the outbreak of poliomyelitis occurring in Walker County, Ala., between the last part of June and the last of September, 1941, and reported by Dr. Casey, was the geographical distribution. A description of this feature has not yet appeared in the literature. In general, it was somewhat as follows:

Of the 130 cases reported in the county, with a population of about 65,000, over 80 per cent were in the southeast quarter of the county's area. The population of this quarter was about 18,000. Thus the incidence was over ten times as high in this quarter as that in the other three quarters of the county's area. In the southeast quarter the disease was concentrated and prevailed at a very high rate in the low-level river-valley areas of the towns of Cordova and Dora. The hill sections of these towns, comprising about one-third of the population of Cordova and two-thirds of that of Dora, remained exempt from the outbreak.

Poliomyelitis virus was reported (by Dr. John R. Paul and his coworkers) to have been recovered from flies captured in an insanitary privy in the heavily affected section of Cordova. The whole area of high or outbreak incidence in Walker County was within

ready range of fly-flight, bird-flight and rat-travel from Cordova or Dora. Along with the number of diagnosed and reported cases there should have been, according to the contentions of the "contagionists," a very much larger number of clinically undiagnosable but potentially infective abortive cases and carriers.

In view of the uncertainties as to the immediate sources of the infection in the situation, the undertaking to figure the average incubation period from the recorded histories of personal contact between diagnosed cases appears adventurous; and the statistical discussion of the figuring, though interesting and in a way illuminating, seems of only academic importance.

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JOURNALS WANTED

Readers are asked to address spare copies of the January, 1942, and March, 1943, issues of the *American Journal of Public Health* to the offices of the Association, where they will be most welcome.

Proposed Report on the Educational Qualifications of Health Educators*

I. The General Scope of Health Education

The health educator assists in helping people to become intelligently aware of individual and community health problems and to share the responsibility for their solution. He interprets health needs, desirable health behavior, and the services of professional health agencies. Successful health education can rarely be accomplished by the use of publicity technics alone. It almost always includes the development of satisfactory learning experiences within organized groups and the training of other public health personnel to aid them in improving the educational opportunities presented by their contacts with individuals.

Health education is rapidly becoming recognized as one of the important fields of service in the modern public health movement. The emphasis upon health education and the demand for professionally trained health educators are increasing. We are without accurate data on the number of health educators now employed in the United States. It is estimated that there are probably four hundred to five hundred, exclusive of teachers of health in public schools and institutions of higher learning. Increasing consideration is being given to the organization of unified, community-wide programs. Thus, promotional progress may be anticipated by the beginning health educator, both through the expansion of his program and through transfer to the service of larger population groups, as his ability is demonstrated.

The health educator in the health department works under the administrative leadership and direction of the health officer. The health educator working in the school system as a teacher, supervisor, or consultant, is a member of the staff of the school and will, of course, meet whatever professional educational standards are set by the school for the type of work involved. Health educators may be employed jointly by health departments and school systems. They are also employed by voluntary agencies. The educational qualifications of a health educator, whether employed by a governmental or by a voluntary agency, should meet generally accepted standards.

This report proposes desirable areas of competence for the health educator, based upon the functions which he is expected to perform. The recommendations are made for the guidance both of officials responsible for the appointment of health educators and of individuals looking forward to careers in health education. The professional standing of persons now performing creditable service as health educators has been established. Successful experience and demonstrated ability should be recognized at the present time as evidence of professional qualification.

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* The Committee on Professional Education of the A.P.H.A. publishes this report before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticisms and suggestions in the further consideration of the report.

This report, like all other statements of the committee on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

II. THE FUNCTIONS OF HEALTH EDUCATORS

The following functions are believed to be essential for carrying out complete community-wide programs in health education. Such programs include health education in the schools and health education with the general public. It is recognized that there is an increasingly close relationship between these two phases of health education. Health educators in various positions will be expected to undertake some or all of the following functions or activities which involve the formulation of plans and methods, the application of specific technics and skills, the supervision of the work of others, and the maintenance of group relations. A job analysis of existing positions reveals wide variations in their scope.

The functions of health educators in community-wide programs of health education are:

In accordance with the administrative policy of the health department or other employing agency:

1. To be responsible for assistance in planning and organizing a program of health education of suitable scope and activities to meet adequately the needs of the community, state, or area to be served. This includes at the outset a study or survey of the needs, the determination of health problems which may be solved, at least in part, by the educational process, and an appraisal of resources.
2. To assist the community in organizing itself to find and solve its health problems.
3. To assist in establishing and maintaining close coöperative working relationships between all agencies (official and nonofficial) which may contribute to health education.
4. To aid in the planning, development, and conduct of training programs for employed personnel, in accordance with the policy of the agency involved, for (a) health agency personnel, (b) school personnel, and (c) personnel of other agencies.

   Nearly all public health personnel have important educational opportunities. To increase the effective use of these opportunities is an important function of health education leadership.
5. To give aid in accordance with the policy of the institution concerned, in planning the health education aspects of pre-service training programs for professional personnel, including (a) public health personnel, (b) school personnel, and (c) others.
6. To provide consultation and guidance to various individuals and groups (such as Parent Teacher Associations, service clubs, and others) in developing and improving their health education activities.
7. To assist in promoting, organizing, and guiding study programs in the field of health for adult and group-work agencies, such as divisions of adult education, Young Men's Christian Associations, and similar groups.
8. To contribute to the improvement of the quality of the health education of the school child in accordance with the standards and policies of the school system.
   a. Through aid in planning school health programs and curricula of health instruction
   b. Through conferences with teachers, supervisors, and school administrators
   c. Through such other activities as the school may desire
9. To organize and operate an informational service to provide answers to inquiries and to supply source materials and source references in answer to requests.
10. To be responsible for the preparation, selection, assembly, and distribution of health education materials, using the services of special technicians and health experts as necessary. Such materials include:
    a. Reports and other printed materials
    b. Visual aids, such as motion pictures, photographs, graphic materials, exhibits, and posters
    c. News releases
11. To organize and assist in conducting a speakers' bureau, conferences, meetings, and radio programs.
12. To see that there is established a program of continuing appraisal of health education methods and materials in order to evaluate the effectiveness of health education procedures.

III. BROAD EDUCATIONAL BACKGROUND

The procedure used in determining the educational qualifications here listed, was to analyze each of the above

functions in terms of needed professional qualifications and to group these qualifications in suitable areas.

Certain facts should be borne in mind in approaching this discussion. Not all positions in health education, as indicated above, are of the same scope. The health officer or other appointing authority may not deem it necessary to require all the qualifications listed below for every position. They are the qualifications believed desirable for the director of a large and complete program. Nevertheless it is believed that the continuing improvement in the training of health educators will provide more and more workers who have this training, and that such a person will eventually prove most useful.

Experts in various technics who are not health educators are commonly needed to assist in editorial work and in the development of films, exhibits, and other graphic materials. The health educator concerned with the production of such material will know the nature, limitations, and possibilities of the processes involved. He will know how to work effectively with printers, motion picture producers, and other specialists. This report does not consider the qualifications of these technical experts.

It is clear that the health educator will be helped by broad cultural background and by a knowledge of (a) the structure, functions, and care of the body, elements of the commoner pathologic processes and elements of epidemiology in its broadest sense; (b) motivation and behavior in human life; (c) society as it is constituted—social forces and their control; (d) forces which affect living—environment and economics; (e) the scientific method in approaching the process of living, distinguishing science from pseudo-science; and (f) the processes of education—why we learn and how we learn.

There is also need for knowledge and skills which are more specifically professional in nature. The division between essentially basic preparation and strictly professional training cannot be readily drawn. Neither is it feasible to indicate here a specific training program in terms of institutions to be attended, degree secured, years of study or specific courses taken.

Some health educators have begun training for this field immediately upon reaching the university level. More will do so in the future. At the same time it is recognized that many of the professional fields in the health and social sciences, including education, contain many of the elements of training which are desirable for the health educator. Many successful health educators have acquired their training through supplementing the training in one of these professional fields by study in those previously omitted areas of knowledge which are required for health education. It is not feasible to discuss here the entrance into health education from various professional fields. We shall not attempt to define optimal training. We shall attempt to state the essential qualifications.

Present requirements in the training of health educators should be sufficiently flexible to be adapted to the scope of work required from the individual in question. Without attempting to indicate subjects of instruction or the division between fundamental and professional study, and based upon the duties to be performed in a complete program of health education, there is listed below the areas of knowledge and skill considered desirable for professional competence in health education. Well known areas of knowledge are listed in brief, general terms, while some of the specific skills needed are listed in more detail.

Desirable qualifications are:

1. Basic cultural education, including the de-

velopment of appreciations and skills in the use of the English language

2. Basic science education, including physics, chemistry, biology, anatomy, physiology, and bacteriology
3. Training in education and educational psychology to provide a knowledge of and functional experiences with
   a. The nature of the learning process, involving individual psychology, interests and reactions, and indirect as well as direct learnings
   b. The principles and practices of education
   c. Methods and possibilities of adult education
   d. The nature of the school health program, including health services, physical education, and other activities
   e. Methods of educational evaluation and their possibilities and limitations in respect to the evaluation of health education programs
   f. Curricula and curriculum development in public schools and in schools of higher learning
   g. Educational supervision and administration
   h. Existing practices and viewpoints of professional groups for which in-service training is provided, and recent trends in their education
   i. How to organize and conduct field training for students at the pre-service level (in the case of a field station for professional training)
4. Social science education to provide an appreciation of the importance of respect for human personality and a knowledge of
   a. Racial, social and cultural characteristics of the people and their mores
   b. The significance of the economic status of population groups
5. Education in the field of hygiene and public health to provide a knowledge of
   a. Physiologic hygiene, including personal hygiene, nutrition and mental hygiene
   b. Environmental sanitation
   c. Basic principles in the organization and administration of public health
   d. Methods of communicable disease control, including the nature of the causative organisms and methods of transmission
   e. Public health statistics and principles of statistical reliability
   f. Survey methods
   g. Relative importance of health problems and mode of attack
6. Training in the area of public administration to provide a knowledge of
   a. Governmental and community organization
   b. Community agencies, their functions, aims and interests
   c. Technics for the successful interview and consultative conference (particularly in public school work)
   d. The qualities of leadership, how to discover leaders and how to work with them
   e. Group-work methods
   f. Principles of planning
7. Training in special skills required in health education to include ability in public speaking and the conduct of public meetings and knowledge of
   a. Methods and materials in health education, their possibilities, and limitations
   b. The evaluation of sources of material and information
   c. How to write informative and friendly letters
   d. How to compile bibliographies
   e. Filing and clipping methods
   f. How to write and edit material for publication
   g. The nature of the printing and duplicating processes and their use
   h. How to distribute educational material effectively
   i. The nature, preparation, and use of visual aids
   j. Possibilities of community participation in the development of educational material
   k. Press relations and technics
   l. Radio methods and technics
   m. Conference technics
   n. How to organize, advertise, and conduct meetings

Carefully planned and supervised field experience and "internship" should be regarded as an important element in the training of the health educator and in the development of skill and ability in the field of health education.

Personal Qualities

A candidate for a position as health educator should possess such personal characteristics as creative ability, lead-

ership, good personal health, good judgment, pleasing personal appearance, common sense, and adaptability. Such important characteristics, along with the ability to work with people, the ability to size up and meet situations, and the ability to present pertinent facts simply and effectively, are not guaranteed by academic records in formal courses of instruction. The health practices of the health educator himself are also important.

Length of the Training Period

If one were to enter upon a program of planned study in the first year of university life, this essential training could not be secured, we believe, in less than 5 years. Study beyond this point would probably be desirable, especially for those aiming for positions of larger responsibility.

If such a 5 year program were followed, the essential basic preparation could be obtained by a 4 years' course leading to a Bachelor's degree with major emphasis upon: (1) the basic health sciences, (2) education, with emphasis upon educational psychology, and (3) the social sciences.

In such a case, the graduate work would include supplementary courses in the above and allied fields, courses to give a working knowledge of the public health program and its operation, and courses in health education, plus supervised field training wherever possible. The content and extent of the graduate work required would vary according to the amount of undergraduate preparation and the interval between undergraduate and graduate study and the quality and type of experience the individual has had.

The Place for Graduate Training

It is recommended that programs of professional study in health education be offered in those institutions which are providing professional education in other fields of public health, and which have available the required instructional facilities. Field training stations are desirable.

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Credit Lines

" IMPRESSIONS OF AMERICA "

" Report of W. M. Frazer, O.B.E., M.D., M.Sc., D.P.H., Barrister-at-Law, Medical Officer of Health of the City of Liverpool, containing his Impressions of America After His Recent Visit " will bring modest, humorous, attentive Dr. Fraser pleasantly to the minds of many who had the privilege of adding to his " impressions " when he visited the United States last fall.

A reading of his report, which occupies 28 pages, underlines again the truth that " He who bring home the wealth of the Indies must carry the wealth of the Indies with him. So it is in travelling. He who would bring home knowledge must carry knowledge with him."

Dr. Frazer discusses our geography and our demography, the governmental system, health department organization, social conditions, general education, medical education and research, public health, hospitals, hotels, railways, war attitudes, and much more. It is all astutely appreciative.

Some samples of Dr. Frazer's " Impressions ":

In the United States highly favourable living conditions have been created as a consequence of the conquest of a large and richly endowed territory during the past 150 years. The success of the Americans in bringing under man's control in this comparatively short space of time a vast country possessing such diversified geographical features and such abundant natural resources is one of the miracles of history. But this triumph over nature has given to the average American the highest standard of living ever enjoyed in any large community and in any age, and his genius for political and social organisation has produced the American way of life—a phrase hard to explain because it is a mixture of many things, of business, high spirits, sport both amateur and professional, comfortable houses with central heating, and every imaginable " gadget," the hire purchase system, the cheap and very efficient car which is the open sesame to the kind of life the American likes to lead, the country club, iced water at every meal, palatial hotels in most cities, and places of amusement everywhere. Most of these things are good, but a recital of them does not tell the whole story about the attitude of the typical American towards life. It is not quite as materialistic an attitude as it appears at first sight. There is another and equally important side to it. Americans are interested in education, literature and art. Their interest in education has produced a system of primary schools, high schools, colleges and universities which—at least in the larger centres of population—give opportunities unsurpassed anywhere in the world to boys and girls with ability to climb the highest rungs of the educational ladder. There are universities and other centres of higher education in every state and almost every city—even the smallest. Some of these institutions may fall below British standards (although many are highly efficient) but they strive to keep abreast of the times, they experiment and they are not afraid to scrap what they have done and to try again. Americans are accustomed to pioneering conditions in regard to many aspects of life and they are used to taking risks both in their business and public affairs. I was fortunate in being able to see something of the higher educational system as I had the opportunity of visiting the Universities of Harvard, Columbia in New York, St. Louis, Chicago, Buffalo, Boston and Toronto. These universities, mainly great city universities are excellently staffed and magnificently housed and equipped and their standard of teaching and research is as high as in corresponding institutions in this country.

. . . .

Some of the features in the public health system in Great Britain are frankly needed owing to poverty or at least to the relatively low standard of living: in a country with a high standard of real wages like the United States comparatively few persons require assistance of this kind except during the rare periods of industrial depression. One favourable circumstance in regard to the health of the community is that American towns are not so congested with buildings as

in this country—streets are wider, there is much more open space and there is practically no smoke in the atmosphere even in the most highly industrialised cities. The last-named feature appears to me to be of great importance. No person who has not visited the United States and lived in its clean and wholesome urban areas can appreciate the enormous damage which the almost uncontrolled emission of smoke into the atmosphere does in this country—damage to health, to buildings and to furnishings and clothes. Heating in American buildings, both domestic and commercial, is almost universally central heating by oil, gas, electricity or steam relayed from centrally-situated depots. As one result of the clean atmosphere of American cities the incidence of respiratory diseases both in adults and children is very low. This is part of the explanation of the extremely low infantile mortality rate in such highly-industrialised cities as Chicago (28.8) and Detroit (30). When one considers the high infantile mortality rates in Liverpool (82 in 1942) and other English industrial areas, the corresponding figures for some American cities appear almost unbelievable, especially as birth-rates there are usually higher than in this country.

. . . .

I have already indicated that the emphasis in connection with public health problems is often differently placed in the United States than in this country. Immunisation against diphtheria is there taken very seriously, and in almost every large American city a very high percentage of children (in some cases approaching 100%) are so immunised. In estimating the value of this work in reducing the incidence of diphtheria epidemiological considerations such as secular variations in the prevalence of this disease and the mild type of organism responsible for it have to be taken into account, but, nevertheless, hygienists in the United States ascribe the fall to nearly vanishing point in the incidence of diphtheria, in some areas, almost entirely to the wholesale immunisation of the child population.

. . . .

Legislation in the United States on the subject of milk supply, although it varies somewhat in the different States, is, on the whole, more drastic and more effectively administered than in Great Britain. Perhaps, in one way at least, their problem is a simpler one since the amount of tuberculosis in cattle has always been much less in the States than in this country. During recent years a campaign for the eradication of tuberculous cows throughout the whole country has been undertaken. . . . So successful has it been that a very large percentage of all milch cows in the United States of America are tuberculin tested, and there are now relatively few reactors. To make assurance doubly sure, milk from tuberculin-tested cows is also pasteurized and bottled so that the risk of contamination on the way from the cow to the consumer is avoided. Partly because of the safety of the supplies, but, no doubt, partly because of its value as a food, milk is highly popular in the United States, and the consumption per head of the population is far higher than it is in this country, averaging about a pint per person per day. It would cause no surprise whatever in an American restaurant or hotel if one asked for a glass of milk at dinner instead of coffee—quite a number of other people will be doing the same.

. . . .

A word or two about the American war effort and their attitude towards the war. I found nobody amongst the hundreds of people of all types that I met who was not heart and soul in favour of the most energetic prosecution of the war until complete victory crowns our joint efforts; and although there is a little grumbling, as there was in this country, when some of the comforts of life are taken away, this is merely a superficial reaction which does not reduce in the slightest the stern resolve of the American nation that this threat to the way of life of the democratic countries shall never occur again.

NEW ITEMS FOR YOUR SAFETY PORTFOLIO

A "Safety Guide for the Farm and Home Front" is available through the Department of Public Services, General Mills, Inc., Minneapolis, Minn. Check lists under such headings as "What Are the Danger Spots on Our Farm?" "Danger Spots in the Barn and Barnyard—Where Are They?" "Is Your Home a Haven of Safety?" are intended to engage the participation of the whole family in a program of accident prevention. The booklet is designed for members of rural youth groups and their leaders, including, of course, teachers.

J. R. Williams, famous cartoonist

whose series entitled "Out Our Way" appears in newspapers all over the country, is doing 12 poster cartoons for the Division of Inspection and Accident Prevention of the Maryland Casualty Company, Baltimore, Md. The first has been distributed; others will follow from month to month. Black and white, size 11" x 14", the June cartoon is entitled "The Hard Way." It depicts a workman watching the overalls just ripped from him, as he oiled moving machinery, twist and turn, while a wise foreman keeps the machine running to give the oiler a realistic lesson in what his carelessness might have done to him.

Safety material can further be supplemented by "Safety Speeds Production," a message directed to supervisors, for which the Division of Labor Standards, U. S. Department of Labor, Washington, D. C., is responsible. While it is for the use of foremen and others in large war plants, much of it is applicable to any work-place, large or small. Two pages answering the question "What are some good housekeeping aids?" present a partial checklist of simple precautions in workplaces so obvious they may easily be overlooked.

And of course you know about the American Safety Standards published by the American Standards Association, 29 West 39th St., New York, N. Y. They include industrial and school lighting, safety code for industrial sanitation, and safety rules and codes for all manner of manufacturing operations. The *List of American Standards for 1943*, of which the section on safety is a part, will be sent free of charge by the A.S.A. Standards approved by the A.S.A. represent general agreement of all interested groups. The American Public Health Association has had a part in the formulation of some of the standards listed and is participating currently in the revision or preparation of others. (See pages 287 and 288 of the March JOURNAL.)

DON'T ADDRESS MARY P. CONNOLLY AT DETROIT ANY MORE!

It will be hard to remember, but since June 1 Mary P. Connolly's permanent address has been Dushore, Pa. She has completed 25 years of service with the Detroit Health Department and has done what she said she would do—retire. She gives up her post as Director of the Bureau of Health Education of the Detroit Department of Health, which she has occupied since 1921, but not her interest in the specialty with which her name has become synonymous. After her Victory Garden has been harvested at Dushore, Miss Connolly will spend part of her time in Ann Arbor, teaching Community Health Organization in the School of Public Health.

Miss Connolly began her public health career as a nurse in the Detroit Health Department, after graduating from the St. Agnes Hospital, Philadelphia. At that time Detroit with its meager health facilities was struggling with an epidemic of influenza and the problems of the war industries. After three years with the nursing division, she was made Director of the Bureau of Health Education and has developed this service into its present far-reaching community-wide program which carries the message of good health to all Detroit citizens. The personnel of the bureau has increased from one in 1921 to fifteen in 1943, and has an annual appropriation for salaries alone of nearly $50,000. During these 25 years the Health Department has grown from a small organization of a few hundred employees to one which now commands the services of 2,200 individuals and spends annually four million dollars of tax money. The phenomenal reductions in the death rates from preventable causes and the reduction of the

crude rate for Detroit to the lowest among the larger cities of the world, is due in no small measure to the seeds of health education sown by Miss Connolly and her small staff of trained workers.

In addition to her degree in nursing, Miss Connolly has received the Master of Science from the University of Detroit. For 20 years she was a non-resident lecturer in the field of health education at the University of Michigan, and of late years she has been, as well, special lecturer in health education at Wayne University. She served for six years as a member of the Governing Council of the Association; five years as Secretary of the Section on Health Education; one year as Chairman of this Section. She is now a member of the Section Council.

Her name on the faculty list of the several Health Education Institutes sponsored by the Association at Annual Meetings has been responsible for many an enrollment among those, and their name is legion, who know that anything she is connected with will be worth while.

CREDIT LINES Salutes Miss Connolly and her work of the past 25 years. It holds in reserve another accolade, sure to be conferred later, for what she will do in the future.

TRIBUTE TO HEALTH EDUCATION FROM AN UNEXPECTED SOURCE

Visual evidences of the effects of all the health education that has been done in this country are many, we think, as we admire individual and collective members of the younger generation. When we were seventeen, were our backs and legs so straight, our teeth so gleaming white, our hair so shining with cleanliness and health? Any group of twenty high school youngsters today could give a similar group of let's say twenty-five years ago cards and spades. The way they dress now has something to do with it, of course, but what the clothes adorn or what adorns the clothes, appears to be better material, esthetically speaking, than what we had to offer.

There is clinical evidence as well that health education has taken hold. An interesting bit comes from Dr. Frank E. Adair, Associate Professor of Clinical Medicine at Cornell University Medical College and guiding genius of the American College of Surgeons' register of cured cancer cases. Says Dr. Adair:

> Education of the public in the matter of cancer control is definitely going ahead. A clinical sign which supports this statement is the size of the cancers operated on today as compared with those that came to the operating table fifteen to twenty years ago.

Dr. Adair prophesies that the teaching of the subject of cancer in connection with the biological study of growth in the secondary school systems of Westchester County and in certain parts of the New York City school system will undoubtedly save the lives of many people. It undoubtedly will, but that is for the future.

The majority of the patients who are presently bringing early and small cancers to Dr. Adair's attention are certainly not the members of the younger generation we have been eulogizing and who are now being taught about the proliferating cell. They are the high school students of fifteen and twenty years ago who got their education in health the hard way, without benefit of classroom instruction from kindergarten on, without benefit of the solicitous care they, as parents, are giving their young today. That is what makes this report from experience so encouraging.

If we didn't have our quart of milk a day while we were growing up, if our wintertime citrus fruit intake was limited to the Christmas orange in the toe of the stocking, if our doctors never saw us except when we were flat on our

backs in bed, nevertheless we of this older generation have been exposed to health education somewhere along the line and are applying to ourselves and to our children what we have learned.

DR. GREGG ON SPEAKING AND WRITING

It is good to know that Captain John Lentz of "Credit-Lines" fame still keeps his appetite for literary caviar and has the opportunity now and then for satisfying it. Recently he sent one of his erstwhile associates, who reconciles herself to the day by an early morning dip into "the literature," the commencement address delivered by Dr. Alan Gregg, Director of the Medical Sciences of the Rockefeller Foundation, at The Jefferson Medical College on March 4, 1943. This address entitled "Language and the Practice of Medicine" was printed in *The Diplomate* for April.

Some of Dr. Gregg's remarks to fledgling doctors may prove interesting to their more experienced colleagues:

On being understandable to one's patients: "For four years you have considered important the opinion of medical men. Now you will have to reckon with the opinion of laymen. Can they understand their doctor? . . . They will be uneasy and perhaps resentful if you aren't a master of simple exposition and plain narrative about things they do not understand and yet may wisely fear."

On current performance in the art of medical and scientific writing: "The common level of medical and scientific writing in our professional books and journals already constitutes the most serious internal limitation to medical education and research. The usual level of professional writing is painful not merely to editors. Even after passing editorial filters, the virus of wretched writing can inflame, insult, and exhaust a clear-minded man . . . even with the benefit of hours of editorial improvement, the medical literature of today exemplifies all too fully the biological adage that life is choked by its own secretions."

On "the unreflecting use of adjectives and adverbs": "Adjectives, like certain antigens, develop their own antibodies."

To those who "think it is too late to learn to use words effectively": ". . . Unnecessary humility endorses needless resignation. Instead of giving up now, you could better admit that *mastery of words comes slowly because language demands, like every beautiful instrument, long practice and discriminating use.* Language cannot take the place of thought, or of action, or of listening, but 'that one Talent which is death to hide' cannot be neglected by those who must lead their fellow men."

NEWSPAPER SUPPORT, MICHIGAN STYLE

H. E. Miller, Resident Lecturer in Public Health Engineering, University of Michigan, sends an editorial published in *The Ann Arbor News* for May 13 which is worth quoting in full. Mr. Miller tells us that the course referred to was one on basic sanitation, designed to prepare these "sub-sanitarians" for the replacement of trained sanitarians in Michigan health units who have been commissioned in the Army.

Mr. Miller's comments on the editorial are worth quoting, too. He says:

In this editorial, an understanding of the relationship that the public health engineering section bears to the school as a whole, and its essential functions in the overall structure of the school is set forth in a way that is frequently not visualised by even well informed public health authorities. The fact that it was uninspired and unexpected, but purely the expression of a newspaper man lends hope to the thought that public health may be accomplishing more than is realized in ways of developing a better general understanding and appreciation of its efforts.

This is the editorial:

Dedicated to Public Health

Completion of a course in public health engineering by 16 men from various cities of Michigan, who now will be known as "sub-sanitarians," accepting positions of responsibility in their home communities, offers a glimpse into the future of services of a highly practicable nature by the University's School of Public Health.

This school soon will occupy its new building on Observatory St., bringing together for the first time its offices, laboratories and staffs, engaging in varied activities but now scattered about the campus.

That name, School of Public Health, indicates the practical purposes to be served. And the experiences of the handful of "sub-sanitarians" offer just a glimpse of those purposes.

The 16 will take the places in community health departments of sanitarians who have gone into the armed services. They will aid public health physicians in safeguarding municipalities against epidemics. They have learned how to do this at the School of Public Health, though their instruction covered only three weeks. Now they will have "field work," rounding out the practicability of their training, at the Kellogg Foundation, with headquarters in Battle Creek. They will hold their new position for "the duration."

They did not receive their training primarily at the hands of doctors of medicine. The staff members with whom they came into contact were, mainly, public health engineers, with knowledge based on experience, as well as theory, in the business of maintaining vigilance against the inroads of disease—by inspecting eating places and dairy herds, by controlling insects and rodents, by avoiding water contamination, etc.

But there will be doctors of medicine in the School of Public Health, and there will be intense research into a number of human ills, including some of the most serious, such as malaria, infantile paralysis and influenza. Mosquitoes will be bred for experimental purposes; so will bacteria, of both the harmful and harmless kinds. One experiment now under way in one aspect of water contamination, in the engineering department of the school, offers some prospect of offering a new field of research into the cause and possible cure of some human maladies. In this connection, the housing of the public health engineers and medical research workers under the same roof will operate for mutual benefit and the public good.

Every phase of public health work will be dealt with in the school—under that same roof. Physicians will be especially trained for public health work; so will other workers in health departments, including the sanitarians—and there will be all those researchers at work—in close proximity, with collaboration made convenient. In other words, several different but related branches of science will be meshed together in a kind of investigating mechanism with the same general objective in view—to keep the public well.

This is an ideal situation. In the past, there has been too much independent research by various branches of science. Medicine and dentistry seldom got together, for example, though they serve common purposes and have overlapping interests. Lately, medicine and chemistry have held closer communion, because of the biochemical drugs coming into widespread use. In the School of Public Health, with well equipped laboratories and highly trained staffs, dealing with separate factors in human problems, but with the same general over-all problem in mind, there will be opportunities for the much-desired collaboration that never before have been presented.

Out of the engineering laboratory may come the clue that will lead to medical research of great value. The investigators in the parasitic disease laboratory are likely to make various discoveries beneficial in the field of public health engineering. The laboratories are separate, but inter-communication is easy in the new home of the school. And out of this school will be a steady flow of students with the knowledge and the training needed to serve the people as guardians of health in a variety of ways.

The formal opening of the School of Public Health, in the near future, will be an important public event. It is not "just another" building dedicated to academic learning. It is dedicated to the purpose of improving ways and means, on a large scale, to keep humanity well. And, considering the equipment in the way of absolutely top-notch personnel and the best in the way of research and teaching equipment that can be produced, the prospect looks very bright. It appears safe to predict that Michigan's School of Public Health will be recognized ere long as one of the great institutions of America, if not of the world.

BOOKS AND REPORTS

Public Health in Manitoba—1941—*A Report of a Study Made by the American Public Health Association, New York*, 1942. 147 pp.

The study of public health administration in Manitoba is a comprehensive one, which is interspersed on almost every page with recommendations in large type. The report is particularly interesting because the Canadian forms of federal and provincial government and health administration are so different from their counterparts in the United States. The national health authority is the Dominion Department of Pensions and National Health, and in the province it is the Manitoba Department of Health and Public Welfare. Of the latter the titular head is the Minister of Health and Public Welfare who must be a member of the Legislative Assembly of the province. He is responsible for all important decisions of policy and in 1941 was the Attorney General of Manitoba. To his Deputy Minister, who must be a professionally trained medical officer of health, he delegates the direction of the department.

The record is one of much administrative confusion, a need for reorganization, and indeed even a desire for guidance in the matter. The province, chiefly rural and agricultural, has a population of about 700,000. Of this figure roughly 250,000 are in Winnipeg, the largest city. The next center in size, Brandon, is a city of 16,000 persons.

It is reported that the Deputy Minister is an extraordinarily capable leader and administrator, who is able to accomplish much with very limited staff and funds. It is obvious that all the salaries for professionally trained people are shamefully low.

The study deals particularly with the problems of rural Manitoba, excluding Winnipeg. An outstanding need is for many more full-time local health units. There are only four, three of which are in Winnipeg and its suburbs. The four serve 39 per cent of the total population of the province. The rest is in the hands of 170 part-time medical health officers all but 16 of whom, the so-called municipal doctors, earn their chief livelihood in the private practice of medicine. One cure would seem to be a much more liberal financial grant from the Department of Pensions and National Health at Ottawa. Another vital lesson for the farmer population to learn is that generous investments in public health appropriations can yield worth while dividends in human happiness.

The rather overwhelming administrative and budgetary matters of medical and mental care, including hospital services and difficult abuses in hospital admissions, the public welfare program, and the voluntary or semi-governmental control of tuberculosis, add complication on complication that would stagger a state with completely organized full-time public health administration on the local level. It is no wonder then, that in describing the four full-time local health services the author's comment on one is as follows: "The health department at Brandon seems at present a less promising picture, principally because such a large proportion of the health officer's time is devoted to the medical care program."

HUNTINGTON WILLIAMS

The Metabolic Cost of Maintaining a Standing Position. *With Special Reference to Body Alignment—By Harriet Graham McCormick. New York: King's Crown Press* (1145 Amsterdam Avenue), 1942. 75 pp. Price, $1.25.

I find this book very challenging to me as an orthopedic surgeon interested in postural matters, but rather difficult to review because it is descriptive chiefly of all the technical detail of the experimental study. To one interested in clinical manifestations it is difficult to wade through so much tabulated material and then be left to draw one's own conclusions in order to apply the data to everyday needs.

The author's observation, that in the relaxed posture type with back knee, forward pelvis, flexed back and forward head, with minimal energy cost is apparently due to the stabilizing effect of ligamentous tension is probably correct. It should not, however, be the basis for the assumption that such a posture is all right or acceptable, because such continued tension and strain will gradually stretch and relax them, and the posture in time will become worse, thus promoting a vicious circle, which as years go by will tend to promote a wear and tear arthritis. Probably if continued the ultimate metabolic cost could be greater than the increased expenditure by the assumption habitually of the posture generally accepted as "good."

It seems to me that the minimal output of energy is not what is desirable, but rather an output which will maintain a reasonably good posture which will be efficient from the standpoint of health as well as improve the facility of coördinated function required for skilled performance and, as the author states, give the greatest satisfaction. In this I concur in the "implications" discussed on page 60, and will join the group desiring the best posture obtainable without too much strain, feeling that in the long run, when the habit is established and such a posture can be maintained more naturally, the metabolic expenditure will be less than shown by these experiments.

It would be of great interest to see the same experiment repeated on the same group after six months to a year of really guided and controlled correction of their postural faults.

C. L. LOWMAN

Democracy Means All of Us—*How Communities Can Organize to Study and Meet Community Needs with Special Suggestions for Developing Nutrition Programs in Wartime. Federal Security Agency—Office of Defense Health & Welfare Services, Washington,* 1942. 30 pp.

This pamphlet, which consists of 18 pages of text and 12 of appendix, can be helpful to the person interested in community organization. Although written to aid in the development of nutrition programs as part of community defense council activities, the principles of organization and procedure outlined apply to all types of community work.

Prepared by a group of outstanding experts in the field of nutrition, education, and public health, the pamphlet is of unusual interest, because the procedures advised and problems encountered in communities of various size are dramatized. Although brief, the booklet is surprisingly complete and can be recommended to both the lay and professional worker.

Particularly valuable is the emphasis on and suggestions for

1. Clearly defining objectives in the planning stage.
2. Reaching all the people—(hence the title, "Democracy Means All of Us").
3. Youth participation.
4. Evaluation. Too often evaluation is neglected or considered only after the opportunity to secure adequate data is passed, and

the authors clearly indicate the importance of considering evaluation during the planning period.

The appendix contains a good bibliography, organizational charts, a list of helpful organizations, suggested questions to assist in studying community problems and resources, and a form for nutrition studies.

W. R. WILLARD

Flying Men and Medicine—*By E. Osmun Barr. New York: Funk and Wagnalls*, 1943. 254 pp. Price, $2.50.

The book is largely a discussion in lay language of the Civil Aeronautics Authority physical examination for flying. Such a subject makes dull reading at best. Physicians will not want to read it because it is too elementary; airmen will find it tedious and in some parts difficult to understand. It is not likely to put its message over to the prospective flyer for whom it was written.

Further, it seems undesirable that the applicant for flying training know too much about the physical requirements and the reasons for them. This has resulted in the circumvention of the requirements by subterfuge, and the unwitting medical acceptance of individuals for flying training with defects which are dangerous.

There are unusual statements, especially on the physiology of flight, which make it clear that the author is not intimate with some of the recent advances in this particular field.

There are several passages of unrestrained emotionality about flying, with change in tense, which one would expect of a less mature type of publication.

Throughout one gets the impression that the book was written, or at least conceived, quite some time ago and has been published now simply because of the renewed interest in aviation and aviation medicine.

The prospective flyer and the flying man of today will find it of limited value. CHARLES E. KOSSMANN

Nutrition Programs for Industrial Employees (No. XIII). 8 pp. December, 1942. Price, $.20.

The Medical Department in War Industries (XIV). 8 pp. December, 1942. Price, $.10.

The Feeding of War Workers—A Selected Annotated Bibliography (No. 70). 15 pp. October, 1942. Price, $.15.

Medical Service in Industry—A Selected Annotated Bibliography with Particular Reference to Health Programs in War Industries (No. 71). 11 pp. December, 1942. Price. $.10.

Industrial Relations Section, Department of Economics and Social Institutions, Princeton University, Princeton, N. J.

Nutrition Programs for Industrial Employees—There is no subject in the field of public health which has attracted such wide attention from all groups in the population as has the subject of nutrition. It almost seems that over night we discovered that the American population was and is, in some respects, suffering from malnutrition.

The present pamphlet outlines the important aspects of the nutritional program for industrial employees. Naturally, in this brief space, only the over-all picture may be presented, but the present pamphlet is complete enough to give anyone interested in this subject an excellent knowledge of the fundamentals of the practical approach to its solution.

The Medical Department in War Industries—The present trend toward group medical practice and socialized medicine has led to the discovery of the importance of the medical department in industry as a nucleus for public

health and medical practice. As a consequence, the medical departments in industry have, in the last five years, grown tremendously in numbers and importance. The functions, both direct and indirect, of such medical departments are set forth in this very brief pamphlet in a topical form.

This is an excellent digest for use by those agencies interested in developing and fostering medical departments in industrial establishments since all of the fundamental factors are set forth in a brief and orderly presentation.

The Feeding of War Workers—To one desiring to make a rapid acquaintance with progress in the field of industrial nutrition, the present pamphlet is of interest and value. The bibliographic items selected by the writers are valuable, chiefly because of their succinct and objective presentation.

In general, the field has been fairly well covered but, of course, the subject of industrial nutrition can hardly well be presented in 15 pages.

Medical Services in Industry—This 11 page mimeographed leaflet makes no pretense at being complete but rather presents a selected bibliography of the subject of medical service in industry.

The subject matter is divided into five parts; general discussions, reports of service of company programs, reports and recommendations of medical associations, special problems and programs in small plants, and finally, industrial health service in war time.

Naturally such a brief pamphlet cannot make any pretense at completeness but the material presented is among the best in the field and is certainly suggestive for those wishing to make an immediate and rapid contact with the problem of medical services in industry.

LEONARD GREENBURG

Exploring the Dangerous Trades—*The Autobiography of Alice Hamilton, M.D. With 8 illustrations by Noah Hamilton. Boston: Little, Brown, An Atlantic Monthly Press Book,* 1943. 433 pp. Price, $3.00.

Public health workers and others interested in the development of industrial hygiene in the United States will find this autobiography with its sociological, political, and philosophical observations particularly stimulating at this time of increased concern for the health of the worker. The author began her numerous and diverse field investigations in the pre-workmen's compensation days of 1910, when she coöperated in the study of occupational diseases in Illinois. Subsequently reference is made to federal surveys which included, among others, the investigation of high-explosive production, and the effect of the air hammer on the hands of stonecutters; to attendance at meetings abroad of the International Congress of Occupational Diseases and Accidents; and finally to the study in 1938 of carbon disulfide poisoning in the viscose rayon industry. Thus three decades of industrial hygiene are presented, an account which constitutes a valuable contribution to a history of the health of the American worker.

W. M. GAFAFER

Nursing History in Brief—*By Minnie Goodnow (2nd ed. rev.). Philadelphia. Saunders,* 1943. 338 pp. Price, $2.25.

The text is intended for schools of nursing giving "courses of fifteen hours or less" and includes "a short outline of facts of nursing history." These facts are broad in scope, going back to 1300 B.C. and extending down to the present time. Each chapter is concluded by means of a summary of important points to remember. The text contains 103 illustrations, largely reproductions of portraits. Chronological outlines of general history and of nursing history are also included. The influence of religious and military orders

on the development of nursing is mentioned.

The treatment of the subject of history is purely factual and not interpretive, and since the text must be a short one the facts are sketchily presented. For example, the development of public health nursing in tuberculosis, child care, school nursing, and industry is treated in one page only. There is nothing of the tremendous development of public health nursing in official agencies in rural areas—the most outstanding recent achievement in this field. Little is said of the political, social and economic factors in general history which have their counterpart in the development of nursing, not even the influence of the Social Security Act upon the education and distribution of nursing in the United States.

One might raise a number of questions as to what historical approaches will give the best results when a short intensive course must be given. Should the approach be factual or interpretive? Should the many facts be sketchily presented, or should they be selective and grouped around large central themes? Should the approach be functional rather than chronological—the outstanding problems of nursing today and some interpretation of how they evolved?

The usefulness of this text will be largely to those instructors, and there are many of them, whose approach is factual and chronological.

MARY ELLA CHAYER

Twenty Years of Medical Research—*By Dorothy White Nicolson. New York: National Tuberculosis Association,* 1943. 97 pp.

This is an account of the work and accomplishments of the Committee on Medical Research of the National Tuberculosis Association. The outstanding features of the work of this committee concern the nutrition and chemistry of the tubercle bacillus. This has resulted in the most complete analysis made of the organism, and the isolation of the active principle of old tuberculin —Purified Protein Derivative, known as PPD. This can be prepared from human, bovine or avian tubercle bacilli. In 1941 a large quantity of PPD was prepared for use in standardizing tuberculin, a project of the Health Committee of the League of Nations. The Carnegie Corporation furnished funds for purchase of a quantity which is in the custody of the U. S. Public Health Service until the war is over, when it will presumably be sent to Copenhagen where other standards are kept.

The fine work of Dr. Florence Seibert is well known. It has been recognized all over the world and she has been the recipient of the highest honors.

We wish it were possible to mention others of the various studies carried on and the names of the workers responsible for them.

The pamphlet gives also a list of the grants by the committee and a list of the organizations which have contributed financially to the work. There is a very valuable and complete bibliography extending from 1921 to 1942 inclusive.

The compilation of the entire book has been done by the secretary of the committee from its inception. The record is one of extensive research with some striking results. The National Tuberculosis Association is to be congratulated on its part in bringing about this work and the publication is a valuable one. MAZÝCK P. RAVENEL

Primer of Allergy—*By Warren T. Vaughan. St. Louis: Mosby,* 1943. 176 pp. Price, $1.75.

The demand for a second edition of the *Primer of Allergy* has fulfilled the prediction of the original reviewers that this little book would become popular. The object of this book as stated by

the author, is to impress upon the patient the need for a thorough understanding and coöperation in the problems presented to the physician by an allergic patient.

This story of allergy explains in a simple way the complex symptoms presented the physician in the majority of cases. Anyone who has read this book before consulting an allergist certainly should be able to understand the whole subject in a clearer light.

The subject matter is approached in a humorous and practical manner. The patient is encouraged to become aware of his own environment and its contributions to his especial case. One is surprised that so much good information can be given to the patient without going into real technical explanations. A much needed and timely explanation to the public on the subject of allergy is contributed by this book.

J. RICHARD ALLISON

An Evaluation of Dental Health Literature—*By Vern D. Irwin and Netta W. Wilson. Minneapolis: Bruce Publishing Co.,* 1942. 58 pp. Price, $0.50.

Courageous indeed were the authors of this booklet, for they have studied the "mistakes that have been made by many sincere and intelligent writers on this subject (dental health)."

To prove that laymen have been misled by "inaccurate, imprecise, contradictory, misleading, impractical, or overtechnical" statements, 2,441 items from state health department publications, dental organization material, books, periodicals, and newspapers were analyzed.

How the authors attacked inaccuracies can be illustrated by the following:

Citing from a state department publication, "Refined foods may be used without harm so long as adequate amounts of the protective foods are utilized," the comment is made by the writers that this opinion is "controversial, and directly opposed to those who present evidence showing that refined foods, especially refined sugars, may harm the teeth."

A chapter on Adaptation of Dental Health Literature will challenge and instruct the health educator no matter what his field may be.

The reviewer is convinced that hereafter before he thrusts reading material upon his public, he will carefully review Irwin's and Wilson's criticism and attempt to adopt their suggestions for the presentation of dental health education material.

With such thoughts is it surprising that your reviewer commends this work as one that will contribute to more realistic and effective dental programs?

J. M. WISAN

Understand Your Ulcer—*A Manual for the Ulcer Patient. By Burrill B. Crohn, M.D., F.A.C.P. New York: Sheridan House,* 1943. 199 pp. Price, $2.50.

The author prepared this manual to be put into the hands of the patient suffering from gastric or duodenal ulcer. He states his specific purposes to be "to give you (the patient) an intelligent understanding of what your doctor says and what he means and so avoid many questions on your part. We aim to give you self-confidence and to allay your fear if you have any." The book scarcely succeeds in either of its purposes.

It devotes too much space to the details of symptoms, complications, treatment, both medical and surgical, including illustrations of operations and surgical devices. Overemphasis is placed upon the lack of specific cause of ulcers and the divergence of opinion among medical men as to treatment. This helps neither the patient nor the profession. One wishes that more attention had been given to the hygiene

of the digestive tract and an effort to provide mental hygiene guides for the patient. Part II contains specific information on preparation and cooking of diets recommended by the author.

WALTER H. BROWN

This Is My Life—*By Agnes Hunt. New York: Putnam,* 1942. 237 pp. Price, $2.50.

The fact that these reminiscences are now reprinted for apparently the third time bears testimony to their charm, and perhaps one should first rejoice that the volume is at last available in an American edition. This tale of the brave descendant of Shropshire gentry who became so intimately connected with Robert Jones and modern efforts in the behalf of the orthopedically handicapped will appeal to more than one kind of reader. Certainly the child psychologist should find food for thought in the life of one whose early childhood seemed to lack every vestige of security and affection. Those interested in the physically handicapped, too, will find here a tale at which to marvel. And even the casual reader may find here a mixture of humor, courage, and mid-Victorianism which will please him.

LEONA BAUMGARTNER

Noxious Gases and the Principles of Respiration Influencing Their Action—*By Yandell Henderson and Howard W. Haggard, 2nd ed., No. 35. New York: Reinhold Publishing Corporation.* 287 pp. Price, $3.50.

The authors of this book are well known for their researches in applied physiology and for their skillful exposition of both technical and general aspects of their field. It is not surprising, therefore, to find that the second edition of their standard treatise on "Noxious Gases" is a competent and readable survey of the subject.

Within its limits the book may be highly recommended. However, it is important to recognize these limits, one of which is hinted in the full title—"Noxious Gases and the Principles of Respiration Influencing Their Action." Approximately a third of the book is devoted to a general discussion of respiration, and the book generally pays scant attention to skin irritants and non-respiratory pathology induced by noxious gases. The decision of the authors to restrict their attention to industrial aspects of the problem resulted in the omission of any treatment of the timely subject of poison gases in war. Phosgene is very briefly mentioned; "mustard gas" (dichlorethyl sulfide) is not discussed at all though it is listed in two tables.

There is a brief bibliography at the end of most of the chapters so that some guidance for further reading is provided. This is particularly necessary in view of the rather elementary character of the book.

ANCEL KEYS

Fundamental Principles of Bacteriology—*By A. J. Salle, B.S., M.S., Ph.D. (2nd ed.). New York: McGraw-Hill,* 1943. 643 pp. Price, $4.00.

The second edition of this successful textbook is greatly improved by the removal of class laboratory directions to a separate volume. It still contains a considerable amount of advanced chemistry which is emphasized to an even greater extent than in the previous edition. There is some tendency to criticise this trend in textbooks on bacteriology but the present reviewer is definitely in agreement with the author that "no student can intelligently understand or pursue research in bacteriology without first having had a sound knowledge of at least inorganic and organic chemistry."

In the present edition there are 27 chapters, including good discussions of the Bacteriology of Food, Soil, Milk,

Water, etc. There is new material on the electron microscope, bacterial nutrition, enzymes, respiration, etc. Gramicidin and actinomycin are discussed but there is no mention of penicillin. Specific infections, as in the previous edition, are covered in a single chapter along with viruses and rickettsiae. However, discussion of fundamental topics like technic, disinfectants, sterilization, fermentation and putrefaction, growth phases, effects of environment, etc., are complete and specific.

The book is well written and edited and unusually fully illustrated. Bibliographies accompanying each chapter bring the literature generally to within a year or so of the date of publication. A well made index completes the volume. MARTIN FROBISHER, JR.

What the Public Knows about Health — *By Mayhew Derryberry, Arthur Weissman and George Caswell. Published by the American Museum of Health,* December, 1942. 144 pp.

This bulletin constitutes a report of investigations which were carried on at the New York and San Francisco Fairs to determine the extent of the health knowledge of the general public. Since information regarding the type of health knowledge which the public possesses is basic to all programs in health education, this report is directed particularly to those persons working in the field of health education. However, the excellent analysis of results will prove useful to many other workers.

The study was carried on at the New York Fair from April 30, 1939, to October 31, 1939, and in order to increase the number of persons tested and also to widen the geographic distribution of those tested, the study was extended to include visitors to the Golden Gates Exposition in 1940. In this report are included a description of the physical set-up of the two testing centers and clearly stated information regarding the composition of the test questions and the administration of the tests. The analysis of the findings is well worth reading. In addition to presenting interesting and scientifically reliable facts, this report includes charts and tables which are most helpful to the reader.

The authors state that this report is the " first comprehensive study of what the man on the street knows about health," and their bulletin presents data obtained as a result of testing about 100,000 visitors to the Fairs. These visitors were each given one of the seven different question sheets as they presented themselves at the quiz booth. The tests varied from day to day, the same set of questions being used for all visitors on any one day. As each visitor finished his question sheet, it was automatically scored in a scoring machine which retained the test paper. The visitor was then either given a set of answers or these were mailed to him. Questions were asked on the topics of cancer, communicable disease, nutrition, general health information, superstitions and misconceptions, anatomy and physiology, maternal and child health, venereal disease, and tuberculosis.

What the Public Knows about Health appears in mimeographed form, in an Accobind Folder. This report of fundamental research has a place in every health education library.

BERYL J. ROBERTS

BOOKS RECEIVED

THE EXAMINATIONS OF WATERS AND WATER SUPPLIES. By Ernest Victor Suckling. 5th ed. Philadelphia: Blakiston, 1943. 849 pp. Price, $12.00.

VITAMINS AND HORMONES. Vol. I. Edited by Robert S. Harris and Kenneth V. Thimann. New York: Academic Press, 1943. 452 pp. Price, $6.50.

REHABILITATION OF THE WAR INJURED. A Symposium. Edited by William Brown Doherty and Dagobert D. Runes. New York: Philosophical Library, 1943. 684 pp. Price, $10.00.

ANNUAL REVIEW OF PHYSIOLOGY. Vol. V. 1943. Editor, James Murray Luck. Stanford University: American Physiological Society & Annual Reviews, 1943. 613 pp. Price, $5.00.

GENERAL BACTERIOLOGY. By D. B. Swingle. New York: Van Nostrand, 1943. 313 pp. Price, $3.00.

THE PROBLEMS OF LASTING PEACE. By Herbert Hoover and Hugh Gibson. Garden City: Doubleday, Doran, 1942. 295 pp. Price, $2.00.

HOUSING YEARBOOK, 1943. Hugh R. Pomeroy and Edmond H. Hoben, Editors. Chicago: National Association of Housing Officials, 1943. 159 pp. Price, $3.00.

ORAL TESTS IN PUBLIC PERSONNEL SELECTION. Chicago: Civil Service Assembly of the United States and Canada, 1943. 174 pp.

MEMOIR OF WALTER REED. The Yellow Fever Episode. By Albert E. Truby. New York: Hoeber, 1943. 239 pp. Price, $3.50.

SHIPBOARD MEDICAL PRACTICE. A Handbook of Ship Sanitation and Emergency Medical Aid at Sea. By W. L. Wheeler. New York: Cornell Maritime Press, 1943. 106 pp. Price, $1.00.

WHAT TO DO TILL THE DOCTOR COMES. By Donald B. Armstrong. New York: Simon & Schuster, 1943. 354 pp. Price, $1.00.

ATLAS OF HUMAN ANATOMY. By Franz Frohse, Max Brodel and Leon Schlossberg. New Ed. New York: Barnes & Noble, 1942. 86 pp. Price, $2.25.

THE WAR ON CANCER. By Edward Podolsky. New York: Reinhold, 1943. 179 pp. Price, $1.75.

MANAGING YOUR MIND. You Can Change Human Nature. By S. H. Kraines and E. S. Thetford. New York: Macmillan, 1943. 374 pp. Price, $2.75.

AIR-BORNE INFECTION. By Dwight O'Hara. New York: Commonwealth, 1943. 114 pp. Price, $1.50.

PUBLIC HEALTH NURSING IN OBSTETRICS. Part IV. Mothers' and Fathers' Classes. New York: Maternity Center, 1943. 108 pp. Price, $1.00.

THE ARMY MEDICAL BULLETIN NUMBER 67. May, 1943, Special Issue. The Prevention and Control of Venereal Diseases in the Army of the United States of America. By Colonel Joseph F. Siler. Office of The Surgeon General, U. S. Army, Washington, D. C.

YOU, YOUR CHILDREN AND WAR. By Dorothy W. Baruch. New York: Appleton-Century, 1942. 234 pp. Price, $2.00.

CHILDREN HAVE THEIR REASONS. By Ruth Wendell Washburn. New York: Appleton-Century, 1942. 257 pp. Price, $2.00.

AS THE CHILD GROWS. By Helen Brenton Pryor. New York: Silver Burdett, 1943. 400 pp. Price, $3.00.

HEALTH AND PHYSICAL FITNESS. By I. H. Goldberger and Grace T. Hallock. New York, Ginn, 1943. 596 pp. Price, $1.92.

RHEUMATIC FEVER IN CHILDREN. ITS RECOGNITION AND MANAGEMENT. New York: Metropolitan Life Ins. Co., 1943. 29 pp.

HANDBOOK OF INFORMATION ON RED CROSS HOME NURSING AND A TEACHING GUIDE OF INSTRUCTORS OF RED CROSS HOME NURSING. The American National Red Cross, Washington, D. C.

SOCIAL HYGIENE NURSING TECHNIQUES. By Nadine B. Geitz. New York: American Social Hygiene Association, 1943. 77 pp. Price, $.25.

VENEREAL DISEASE CLINICS, 1943 revision of Supplement No. 4 to Venereal Disease Information. U. S. Public Health Service, Division of Venereal Diseases, Washington.

HEALTH PROBLEMS IN NEGRO COLLEGES. Proceedings of the First and Second Annual Meetings of the National Student Health Association. New York: National Tuberculosis Association, 1943.

THE KITCHEN IN WAR PRODUCTION. By Helen Hill. New York: Public Affairs Committee, 1943. Price, $.10.

EXHIBITS—HOW TO PLAN AND MAKE THEM. By Bruno Gebhard, H. E. Kleinschmidt, Marion McKinney, Evelyn Engel and Beatrice Tolleris. New York: National Publicity Council, 1943. 30 pp. Price, $.60.

FREEDOM FROM WANT: A WORLD GOAL. By Elizabeth E. Hoyt. New York: Public Affairs Committee, 1943. Price, $.10.

CAREERS IN PUBLIC HEALTH. By Adrian G. Gould. Chicago: Science Research Associates, 1943. Price, $.60.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Good News—No evidence has yet been uncovered indicating that the increased employment, the harder work, the longer hours, the crowded boom towns have adversely affected the downward trend of the tuberculosis death rate. In the reported sample, every month since Pearl Harbor has registered a lower rate. It is, however, too early for one to become complacent and to neglect any single tuberculosis preventive measure.

ANON. War Time Trends in Tuberculosis. Stat. Bull. (Met. Life Ins. Co.). 24, 5:1 (May), 1943.

Seems Like a Good Idea!—As fluorine in drinking water appears to affect dental caries, this thesis proposes that 1.0 p.p.m. of fluorine be added—as it could easily be—to some municipal water supply for which a competent control area could be selected.

AST, D. B. The Caries-Fluorine Hypothesis and a Suggested Study To Test Its Application. Pub. Health Rep. 58, 23:857 (June 4), 1943.

For Mental Comfort, General Efficiency and Safety—Even though you haven't the remotest connection with industrial hygiene, you can't help but be interested in this sprightly discussion of the use of color in work places. Here is a sample: "So Mary and John meet at noon in the peach cafeteria. And that evening they meet again, one from a rose locker room, the other from a blue, to walk down an ivory hued stairway."

BIRREN, F. Color Technique in Industry. Sight-Saving Rev. 13, 1:3 (May), 1943.

And We Salute You, Sir!—You will surely not want to miss this graceful and informal word of parting from one who remembers the giants of the olden days. Not many there are of us who knew Koch and Loeffler and Klebs and Gaertner and Biggs, and every word dropped by those who did should be gathered up by all.

BOLDUAN, C. F. Some Reminiscences and a Valedictory. Quart. Bull. (City of N. Y. Dept. of Health). 11, 2:23 (May), 1943.

When Women Work for War Wages—Industrial absentee rates have risen from a normal 3 per cent to an all-time high of 8 to 10 per cent. Newly added women workers seem to be chiefly responsible for the larger part of this increase. Youth is another factor. There is a whole six-course dinner for thought in this brief discussion.

DANIELS, L. R. Medical Aspects of Absenteeism. New Eng. J. Med. 228, 24:773 (June 17), 1943.

Mental Comfort for Next Winter's Shivers—Colder homes in the winter of 1942–1943 probably were responsible for only very small increases in respiratory diseases, and in the opinion of some sanitarians more good than harm resulted from fuel oil limitation.

DEAN, J. Fuel Rationing and Public Health. J.A.M.A. 122, 8:511 (June 19), 1943.

Not Blindness But Idleness, the Burden—It will do no harm to any of us to keep intelligently open minds upon questions of the care of the blind even though we don't make a living in this field of public service, so you are hereby cordially invited to taste this discussion of the rehabilitation of the war blinded.

FARRELL, G. For Those in Darkness. Survey Midmonthly. 79, 6:167 (June), 1943.

How Much Do Nurses Cost?—How much will a generalized public health nursing service cost a health department? You may want to know in order to make a budget, or to compare yours with others' experience, or to make changes. You'll find useful figures in this committee report.

GAVENS, H. Public Health Nursing Costs in a Health Department. Pub. Health Nurs. 35, 6:299 (June), 1943.

Food-borne Infections—Disconcerting evidence of the chances we take whenever we eat runs through this excellent review of recent studies of amebiasis, trichinosis, typhoid fever, etc., etc. Useful source material for your files.

GETTING, V. A. Epidemiologic Aspects of Food-borne Disease. New Eng. J. Med. 228, 23:754 (June 10), 1943.

More Potent Typhoid Vaccine—A purified antigenic material obtained from an *Eberthella typhosa* culture and administered in 1 mg. dosage produced mouse-protective antibodies in greater amounts than 2.4 ml. of standard vaccines, and with less local and constitutional reactions.

MORGAN, H. R., *et al.* Immunizing Potency in Man of a Purified Antigenic Material Isolated from *Eberthella Typhosa*. J. Immunol. 46, 5:301 (May), 1943.

Day Nursery Meals—Many health officials, who are concerned with the care of children of war-working mothers, will be helped by this discussion of mass feeding of toddlers.

PELLER, L. E. Eating in Groups in War Time. Ment. Hyg. 27, 2:188 (Apr.), 1940.

Encephalitis Prophylaxis—Should a severe epidemic of the St. Louis or Japanese Type B encephalitis occur it may prove worth while to use a non-infective vaccine, which has shown its protective value in volunteers.

SABIN, A. B., *et al.* The St. Louis and Japanese B Types of Epidemic Encephalitis. J.A.M.A. 122, 8:477 (June 19), 1943.

And What Are You Doing about This Nutrition Business?—Two sentences from this challenging paper ought to be sufficiently provocative to send you to the issue of the "Reports" in which it is published. There are two other good papers on the same topic which you will not want to miss. Here are the sentences? "It has already taken too long for public health officials to recognize that malnutrition is a problem in preventive medicine." and "We have, to some extent, in this country every dietary deficiency disease known to man."

SEBRELL, W. H., and WILKINS, W. The Rôle of the Health Department in the National Nutrition Program. Pub. Health Rep. 58, 21:803 (May 21), 1943.

Rats!—Community sprees of rat-catching with attending publicity hullabaloo are futile health gestures. Rodent control in cities is an essential public health measure of an entirely different complexion. How it may be accomplished effectively is outlined in an important paper—considering the fact that sylvatic plague may spread some day to our rat-infested industrial cities which are already enjoying an increasing typhus incidence.

SHERRARD, G. C. A Plan for Rodent Control in Cities. Pub. Health Rep. 58, 22, 825 (May 28), 1943.

ASSOCIATION NEWS

THREE-DAY WARTIME PUBLIC HEALTH CONFERENCE AND
SEVENTY-SECOND ANNUAL BUSINESS MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
New York, N. Y., October 12, 13, 14, 1943
Headquarters: Hotel Pennsylvania

PRELIMINARY PROGRAM will be published in the September Journal

LOCAL COMMITTEE APPOINTED

The Local Committee on Arrangements for the Wartime Conference and the 72nd Annual Business Meeting is as follows:

Chairman: Ernest L. Stebbins, M.D.
Honorary Chairman: The Honorable Fiorello H. LaGuardia
Co-Chairman: Edward S. Godfrey, Jr., M.D.
Secretary: Leona Baumgartner, M.D.
Treasurer: Matthew Byrne

Subcommittee Chairmen
Finance: Frank Kiernan
Meeting Rooms: John Oberwager, M.D.
Publicity: Frank A. Calderone, M.D.
Radio: Iago Galdston, M.D.
Reception: John L. Rice, M.D.

NOMINATIONS FOR THE THE GOVERNING COUNCIL

In accordance with the By-Laws of the Association, the Nominating Committee for Governing Council members, consisting of one Fellow from each Section, reports the following nominations for the Governing Council. The By-Laws provide that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, provided such petition is received fifteen days before the Annual Meeting." The Chairman of the Committee is Friend Lee Mickle, Sc.D., Director of Laboratories, State Department of Health, Hartford, Conn. The other members are: Gordon M. Fair, Engineering Section; Wilton L. Halverson, M.D., Health Officers Section; Albert C. Hunter, Ph.D., Food and Nutrition Section; Robert A. Kehoe, M.D., Industrial Hygiene Section; Hugo Muench, M.D., Vital Statistics Section; Sophie C. Nelson, R.N., Public Health Nursing Section; Alton S. Pope, M.D., Epidemiology Section; William D. Stovall, M.D., Laboratory Section; Clair E. Turner, Dr.P.H., Public Health Education Section; Estella F. Warner, M.D., Maternal and Child Health Section. (The representatives

from the new School Health Section will be elected at the forthcoming Annual Business Meeting.)

There are thirty elective councilors on the Governing Council, of whom ten are elected each year. The ten Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting in New York City will be elected for the three year term 1943–1946.

George Baehr, M.D.
Office of Civilian Defense
Washington, D. C.

M. E. Barnes, M.D.
State University of Iowa
Iowa City, Ia.

W. W. Bauer, M.D.
American Medical Association
Chicago, Ill.

Selwyn D. Collins, Ph.D.
U. S. Public Health Service
Washington, D. C.

Edwin L. Crosby, M.D.
Johns Hopkins Hospital
Baltimore, Md.

George B. Darling, Dr.P.H.
W. K. Kellogg Foundation
Battle Creek, Mich.

Paul A. Davis, M.D.,
Goodyear Tire and Rubber Company
Akron, Ohio

R. E. Dyer, M.D.
National Institute of Health
Bethesda, Md.

R. F. Feemster, M.D.
State Department of Health
Jamaica Plain, Mass.

Leroy U. Gardner, M.D.
Director, Trudeau Foundation
Saranac Lake, New York

Edward S. Godfrey, Jr., M.D.
State Commissioner of Health
Albany, N. Y.

Arthur H. Graham, M.D.
East Alabama Health District
Opelika, Ala.

Albert S. Gray, M.D.
State Department of Health
Hartford, Conn.

Jean Gregoire, M.D.
Ministry of Health
Quebec, Que.

Lucy Heathman, M.D.
State Department of Health
Minneapolis, Minn.

Herman E. Hilleboe, M.D.
U. S. Public Health Service
Chevy Chase, Md.

Prof. Charles G. Hyde
University of California
Berkeley, Calif.

Sally Lucas Jean
Pemaquid Point, Me.

W. S. Leathers, M.D.
Vanderbilt University
Nashville, Tenn.

Hugh R. Leavell, M.D.
Director of Health
Louisville, Ky.

Helen S. Mitchell, Ph.D.
Office of Community War Services
Washington, D. C.

Joseph W. Mountin, M.D.
U. S. Public Health Service
Washington, D. C.

George St. J. Perrott
U. S. Public Health Service
Washington, D. C.

W. S. Rankin, M.D.
Duke Foundation
Charlotte, N. C.

Emilie G. Sargent, R.N.
Visiting Nurse Association
Detroit, Mich.

T. F. Sellers, M.D.
State Board of Health
Atlanta, Ga.

John J. Sippy, M.D.
San Joaquin County Health District
Stockton, Calif.

Walter D. Tiedeman, M.C.E.
State Department of Health
Albany, N. Y.

Arthur D. Weston
State Department of Health
Newton, Mass.

Robert E. Wodehouse, M.D.
Department of Pensions and National Health
Ottawa, Ont.

RATES QUOTED BY NEW YORK HOTELS

Wartime Public Health Conference and Seventy-second Annual Business Meeting—October 12–14, 1943

	Rooms With Bath	
	Single	*Double*
Headquarters:		
Hotel Pennsylvania, 7th Avenue and 33rd Street	$3.85– 8.80	$5.50– 9.90
Hotels near Hotel Pennsylvania:		
Governor Clinton, 31st Street and 7th Avenue	3.30– 5.50	4.40– 7.70
McAlpin, Broadway and 34th Street	3.30– 6.60	4.95– 8.80
New Yorker, 34th Street and 8th Avenue	3.85– 8.80	5.50–11.00
Selected Hotels Outside Pennsylvania Zone:		
Ambassador, Park Avenue and 51st Street	5.00– 8.00	7.00–10.00
Astor, Broadway and 44th Street	3.00– 5.00	5.00– 8.00
Barbizon (Women), Lexington Avenue and 63rd Street	3.00– 3.50	4.50– 5.50
Biltmore, Madison Avenue and 43rd Street	5.50–12.00	7.50–14.00
Bristol, 129 West 48th Street	2.50– 4.00	3.50– 6.00
Commodore, Lexington Avenue and 42nd Street	3.50– 5.50	5.50– 8.80
Cornish Arms, 311 West 23rd Street	2.25– 2.50	3.50– 4.00
Fifth Avenue Hotel, 24 Fifth Avenue (9th Street)	3.75– 5.00	5.00– 7.00
George Washington, 23rd Street and Lexington Avenue	2.00– 4.00	3.50– 6.00
Lexington, 48th Street and Lexington Avenue	4.00– 6.00	5.50– 8.00
Lincoln, 8th Avenue and 44th Street	3.00– 5.00	4.00– 8.00
Midston House, 22 East 38th Street	3.00– 3.25	4.00– 4.50
New Weston, Madison Avenue and 50th Street	4.00– 6.00	6.00– 9.00
Paramount, 46th Street, West of Broadway	2.50– 4.50	4.00– 8.00
Park Central, 7th Avenue and 55th Street	4.00– 5.00	6.00– 7.00
Parkside, 18 Gramercy Park South	2.50– 3.00	5.00
Piccadilly, 227 West 45th Street	2.50– 4.00	3.50– 6.00
Prince George, 14 East 28th Street	2.50– 4.00	3.50– 7.00
Roosevelt, Madison Avenue and 45th Street	4.50– 8.00	6.50–12.00
St. Regis, Fifth Avenue and 55th Street	6.00– 7.00	7.00–11.00
Seymour, 50 West 45th Street	4.00– 5.00	5.50– 6.00
Shelton, 49th Street and Lexington Avenue	3.50– 5.00	5.00– 7.00
Waldorf-Astoria, 50th Street and Park Avenue	7.00–10.00	10.00–15.00
Wellington, 7th Avenue and 55th Street	2.50– 4.00	3.50– 6.00

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Jesse B. Aronson, M.D., Bannock County Health Unit, Pocatello, Ida., P.A. Surgeon (R), U. S. Public Health Service; Acting Director

P. Richard Auriemma, M.D., 5716 Bay Shore Walk, Long Beach, Calif., Senior Physician, Los Angeles County Health Dept.

Charles M. Covington, M.D., Box 270, Belton, Tex., Director, Central Texan Health Dept.

Stephens L. Harp, M.D., Greenville, Ga., Commissioner of Health, Meriwether County Health Dept.

Robert E. Karrer, M.D., 535 Finch Bldg., Aberdeen, Wash., Asst. Surgeon (R), U. S. Public Health Service

Angelo M. Perri, M.D., 814 Federal St., Philadelphia, Pa., Senior Medical Officer, Dept. of Health

Wieland W. Rogers, M.D., 962 Main St., Jacksonville, Fla., City Health Officer

Harold H. Rutledge, M.D., Hernande, Miss., Director, Tate County Health Dept.

Edward S. Schulze, M.D., 72 3rd Ave., San Mateo, Calif., Physician in charge, Communicable Disease Section, San Mateo County Dept. of Public Health and Welfare

Leonard O. Schwartz, M.D., Box 310, Weirton, W. Va., Health Director, Hancock County Health Dept.

Charlotte Singer-Brooks, M.D., M.S.P.H., 2504 H St., Sacramento, Calif., Medical Officer, State Dept. of Public Health

Robert G. Wetterstroem, M.D., P. O. Box 47, Olathe, Kans., Director, Johnson County Health Dept.

Royal W. Williams, M.D., 103 Main St., Yazoo, Miss., P.A. Surgeon, U. S. Public Health Service; Acting Health Officer

Laboratory Section

Robert W. Ambrose, Lederle Laboratories, Inc., Pearl River, N. Y., Research Chemist

Harlan D. Anderson, Ph.D., State Dept. of Health Laboratories, Lansing, Mich., Biochemist

Herbert C. Batson, Ph.D., 125 W. Kilborn St., Lansing, 6, Mich., Acting Assoc. Director, State Dept. of Health Bureau of Laboratories

George W. Chu, D.Sc., Bureau of Sanitation, Board of Health Bldg., Honolulu, T. H., Asst. Bacteriologist, Territorial Board of Health

Marion Cody, M.S., 224 Crescent Ave., Peoria, Ill., Bacteriologist, Peoria Health Dept.

Virginia M. Eve, Lederle Laboratories, Inc., Pearl River, N. Y., Supervisor of Blood Plasma

Lieut. Robert M. Johnston, Sn.C., 504 North Second St., Harrisburg, Pa., Laboratory Officer, A. U. S., Camp Butner, N. C.

Lucile M. Portwood, M.S., P. O. Box 76, Okemos, Mich., Bacteriologist, Michigan Dept. of Health

Elizabeth D. Tintle, Lederle Laboratories, Inc., Pearl River, N. Y., Supervisor

Engineering Section

Julio G. Calderin, 73 Georgetti St., Rio Piedras, Puerto Rico, Sanitarian, Insular Health Dept.

William C. Chaplin, 1520 Court St., Alameda, Calif., Student, State College of Washington

Ernest E. Frisby, 1012 Kilson Drive, Santa Ana, Calif., Chief, Division of Sanitation, Orange County Health Dept.

Stanley H. Gates, 950 Dollison Ave., Springfield, Mo., City Sanitary Inspector

Frank S. Hemmings, Jr., 701–3 Persons Bldg., Macon, Ga., Engineering Aide, State Dept. of Health

Jenaro Maldonado-Capriles, Luno 50, San Juan, Puerto Rico, Entomologist, Bureau of Malaria Control, Puerto Rican Dept. of Health

Fausto Mariota-Trias, Box 543, Rio Piedras, Puerto Rico, Senior Sanitarian, Insular Health Dept.

Thomas M. Sperbeck, 309–C St., Marysville, Calif., Sanitarian, Sutter-Yuba Bi-County Health Unit

Earle W. Tibbetts, 110 Main St., Farmington, Me., District Sanitary Engineer, State Bureau of Health

Ben F. Williams, 1628 Palma Plaza, Austin, Tex., Engineer, State Dept. of Health

Joseph B. Winston, 1650 Bonnie Brae, Houston, Tex., Sanitary Engineer, Harris County Health Unit

Industrial Hygiene Section

Henry N. Doyle, 1911 4th Ave., W., Birmingham 3, Ala., Asst. Public Health Engineer, U. S. Public Health Service

Crit Pharris, M.D., 27 Bretton Rd., West Hartford, Conn., Industrial Hygiene Physician, United Aircraft Corp.

Angel Reaud, M.D., Calle J 556, Vedado, Habana, Cuba, Professor of Industrial and Social Hygiene, Escuela Tecnica General Aleman

Food and Nutrition Section

Eleanor M. Bigelow, M.S., 1340 Lombard St., Philadelphia 47, Pa., Nutrition Consultant, Visiting Nurse Society of Phila.

Mary B. Horton, 524 West 57th St., New York, N. Y., Educational Director, Sheffield Farms Co., Inc.

M. Helen McLachlan, M.A., 1325 S. Grand, St. Louis, Mo., Instructor in Dietetics, School of Nursing, St. Louis Univ.

Irene K. Renz, 1701 Grove Ave., Richmond 20, Va., Nutritionist, State Dept. of Health

Maternal and Child Health Section

Frances E. Brennecke, M.D., 721 N. State St., Jackson 6, Miss., Director, Maternal and Child Health, State Board of Health

Paul Claveau, M.D., D.P.H., Health Unit, Chicoutimi, Quebec, Canada, Medical Officer, Ministry of Health

Alpheus J. Cross, D.D.S., P. O. Box 101, Freedom, Pa., District Dental Officer, Western Pa. Dental Div., State Dept. of Health

Eli H. Keshishian, Ph.G., 830 Moody, Waltham, Mass., Student, Middlesex Univ.

Olimpia T. Zeno, P. O. Box 1466, San Juan, Puerto Rico, Supervisor, Medical Social Work, Public Health Unit

Public Health Education Section

Boyce N. Campbell, 1015 West "B" St., Russellville, Ark., Public Health Sanitarian, State Board of Health

William M. Flaherty, Box 518, Santa Rosa, Calif., Exec. Sec., Sonoma County Tuberculosis Assn.

Florence B. Hopkins, M.D., D.M.D., Room 319, 73 Tremont St., Boston, Mass., Dental Consultant, State Dept. of Public Health

Edith Kostol, Room 112, Court House, Bend, Ore., Secty., Deschutes County Health Assn.

Dr. Jose R. Martinez, Calle de Concepcion 62, San Salvador, El Salvador, C. A., Trainee, Herman Kiefer Hospital, Detroit, Mich.

Hellen R. Perrin, 836 E. 17th Ave., Denver, Colo., Interested citizen (served as City Commander of Cancer Control Campaign)

Evelyn A. Potter, 20 Central St., Topsfield, Mass., Public Health Education Worker, Div. of Adult Hygiene, State Dept. of Public Health

Beryl J. Roberts, M.Ed., 73 High St., Charlestown, Mass., Health Educator, Boston Health Dept.

Robert C. Tyson, Box 215, St. Maries, Ida., Sanitarian, State Dept. of Public Health

Public Health Nursing Section

Bess Alverson, Public Health Dept., Moscow, Ida., Staff Nurse, Latah County Health Unit

Virginia Cartagena, Box 284, Utuado, Puerto Rico, Supervisor of Public Health Nurses, Dept. of Health

Mildred S. Chambers, 3446 Connecticut Ave., Washington 8, D. C., Asst. to Director of Home Nursing, American Red Cross

Winnie L. Doyle, M.A., Health Dept., Manchester, Tenn., Consultant Nurse, State Dept. of Public Health

Edythe M. Frethy, 105 Ellison Ave., Beckley, W. Va., Supervising Nurse, Koppers Coal Division

Louise Guidry, M.A., 204 Roselawn, Monroe, La., Regional Advisory Nurse, State Dept. of Health

Harriet M. Holley, R.N., Board of Education, St. Joseph, Mo., Supervisor of School Nurses

Anna C. Myers, 802–5th Ave. Bldg., Moline, Ill., Public Health Nurse, State Dept. of Public Health

Ann A. Pador-Razim, 3645 Clinton Ave., Berwyn, Ill., Public Health Nurse, Berwyn Health Dept.

Loretta T. Schuler, R.N., Kendrick, Ida., Senior Public Health Staff Nurse, North Central District Health Unit

Bess W. Storey, 4606 Windom Place, N.W., Washington 16, D. C., Staff Nurse, District of Columbia Health Dept.

Ethel Turner, R.N., Manhattan Beach, Severna Park, Anne Arundel County, Md., Supt., Instructive Visiting Nurse Assn. of Baltimore City

Epidemiology Section

Lieut. Hyman E. Bass, M.C., Bruns General Hospital, Santa Fe, N. M.

John C. Connor, 4415 Voltaire St., San Diego, Calif., Qualified Asst. in Epidemiology, U. S. Navy

Capt. Owen S. Ogden, M.C., Station Hospital, Ft. F. E. Warren, Wyo., Epidemiologist, U. S. Army

Henrietta R. C. Paine, M.P.H., 543 Leonard Rd., Oakdale Farms, Norfolk 5, Va., Student, Yale Univ., Dept. of Public Health

Leon S. Saler, M.D., M.P.H., 805 Bauer Ave., Charleston, W. Va., Act. Director, Bureau of Venereal Diseases, State Health Dept.

School Health Section

Werner H. Bloch, M.D., 206 Grove St., Elmira, N. Y., Chief Medical Supervisor, Board of Education

Carmelite Janvier, M.A., 703 Carondelet St., New Orleans, La., Director of Special Services, New Orleans Public Schools

Paul G. Lacroix, M.D., 500 Medical Arts Bldg., New Orleans, La., Asst. Medical Director, Orleans School Board

Mary B. H. Michal, M.D., Health Dept., Waynesville, N. C., Asst. District Health Officer, Dist. Health Dept.

Unaffiliated

Francisca Bou, Bou, Corozal, Puerto Rico, Supervisor of Medical Social Work, Dept. of Health

Roy H. Bridger, D.D.S., 8714 Cameron, Silver Spring, Md., Dental Clinician, Montgomery County Health Dept.

Thos. H. Charrey, M.S., 410 Bannock, P. O. Box 2145, Boise, Ida., Merit System Supervisor, State Dept. of Public Health

Dolores G. de La Caro, Arzuaga 1, Rio Piedras, Puerto Rico, Chief, Bureau of Medical Social Services, Div. of Public Health, Dept. of Health

Sidney B. Finn, D.M.D., New York State Dept. of Health, Albany, N. Y., Senior Dentist

Emelie Levin, M.S.S., 1000 Admiral Blvd., Kansas City 6, Mo., Exec. Director, Alfred Benjamin Dispensary

Monserrate G. Olmo, Box 167, Lares, Puerto Rico, Medical Social Work Supervisor, Dept. of Health

William Atmar Smith, M.D., 72 Society St., Charleston, S. C., Practising Physician

DECEASED MEMBERS

Theodore V. Bauer, M.D., Buffalo, N. Y., Elected Member 1924, Industrial Hygiene Section

D. N. Cone, M.D., Jasper, Fla., Elected Member 1937, Epidemiology Section

Warren F. Draper, Jr., M.D., Parris, Tex., Elected Member 1942, Health Officers Section

Hubert Flurry, M.D., Booneville, Miss., Elected Member 1942, Health Officers Section

Sir Arthur Newsholme, Worthing, Susset, England, Honorary Fellow 1931

Dr. Mosby G. Perrow, Lynchburg, Va., Elected Member 1908, Elected Fellow 1922, Health Officers Section

Fred C. Spalding, Valley City, N. D., Elected Member 1939, Public Health Education Section

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

POSITIONS AVAILABLE

MEDICAL OFFICERS NEEDED—TENNESSEE VALLEY AUTHORITY

The Tennessee Valley Authority is in urgent need of medical officers who are not eligible for military service and who are willing to accept assignments to war industrial activities (construction, manufacture of war chemicals and manufacture of hydroelectric power) as their participation in the all out war effort. Responsibilities include physical examinations, industrial hygiene, care of injuries, medical care to families in remote construction areas and general public health responsibilities in construction camps and villages.

Salary ranges from $3,200 to $4,200 per annum with opportunity for promotion.

For further information write to Dr. E. L. Bishop, Director of Health, Tennessee Valley Authority, Chattanooga, Tenn., or to the Personnel Department, Tennessee Valley Authority, Knoxville, Tenn.

CAREER OPPORTUNITIES IN PENNSYLVANIA

Charles B. Frasher, Merit System Supervisor, Pennsylvania State Department of Health, 207 Blackstone Building, Harrisburg, announces that appointments will soon be made in the following branches of the State Health Department of Pennsylvania: Health Conservation, Tuberculosis Control, Venereal Disease Control, Pneumonia Control, Industrial Hygiene, Narcotic Drug Control, Environmental Hygiene, Public Health Laboratories, Maternal and Child Health Services, Crippled Children's Services, School Medical Inspection, Dental, Nutrition, Milk Sanitation, Public Health Education, Sanitary Engineering, Vital Statistics, Public Health Nursing, Accounts, Biologicals and Supplies, Merit System, Tuberculosis Sanatoria. Open competitive examinations will be held and the resulting lists are expected to be in existence for 2 years or longer. Residence requirements are waived for professional positions.

Merit System for Personnel Administration, Delaware, is accepting applications for position of Deputy State Health Officer in Delaware State Board of Health. Salary range $3,600 to $4,200. Applications accepted until further notice. Those interested should communicate with Merit System Supervisor, P. O. Box 1911, Wilmington, Dela., or State Board of Health, Dover, Dela.

Notice of an expected vacancy for an Industrial Hygiene Engineer in the Los Angeles County Health Department has been received. Those interested should communicate with Dr. H. O. Swartout, Acting County Health Officer, Los Angeles, Calif.

Tuberculosis Association in large eastern city is accepting applications for position on staff as health education secretary. Requirements: basic training in health education. Experience desirable. Should have ability in public speaking, radio, newspaper and visual education including sound motion pictures and exhibits. One month's vacation. Five day week with occasional work on Saturdays. Young man exempt from military service. Address **Box K**, Employment Service, A.P.H.A.

Announcement is made of the following examinations to be held by the State Personnel Board, Seattle, Wash., for positions in the State Department of Health and County Health Departments:

Position	*Salary Range Entrance*	*Maximum*
Bacteriologist B.....	$160	$190
Laboratory Helper D...	120	140
Laboratory Assistant C	140	160
Laboratory Technician	140	170
District Public Health Officer V	380	440
Public Health Nurse B	160	190
Asst. Venereal Disease Investigator B	160	190
General Sanitarian A...	190	220
Milk Sanitarian A.....	190	220
Chief of Public Health Education	280	320
Senior Milk Sanitarian..	220	250
Obstetric Consultant VI	440	500
Pediatric Consultant VI	440	500
Senior Bacteriologist A	190	220

THE MERIT SYSTEM COUNCIL OF WEST VIRGINIA ANNOUNCES UNASSEMBLED EXAMINATIONS FOR THE FOLLOWING POSITIONS IN THE WEST VIRGINIA STATE HEALTH DEPARTMENT

Position	*Salary*
Director of Maternal and Child Hygiene	$4,200–$4,800
Assistant Director, Maternal and Child Hygiene	3,840– 4,500
Director, Industrial Hygiene	4,200– 4,800
Director, Vital Statistics	4,200– 4,800
Director, Communicable Diseases	4,200– 4,800
Assistant Director of Communicable Diseases (Tuberculosis)	3,840– 4,500
Assistant Director of Communicable Diseases (Venereal Disease)	3,840– 4,500
Venereal Disease Consultant	3,840– 4,500
Director, Bureau of Dental Hygiene	3,840– 4,500
Director of County Health Work	4,200– 4,800
Senior Health Officer	3,840– 4,500
Junior Health Officer	3,360– 3,840
Health Officer Trainee	2,400
Assistant Director, Hygienic Laboratory	2,640– 3,240
Senior Bacteriologist	1,800– 2,400
Senior Serologist	1,800– 2,400
Consultant Nurse in Special Fields	2,400– 3,000
Public Health Nursing Supervisor (State level)	1,920– 2,400
Public Health Nursing Supervisor (Local level)	1,800– 2,040
Chief of Medical Services	4,800– 5,280

Persons interested should make application to the Merit System Council, 212 Atlas Building, Charleston, W. Va.

Residence in West Virginia has been waived. Applications will be accepted continuously.

Council of Social Agencies in large Midwestern city is seeking person to fill position of assistant secretary in its health division. Responsibilities include coördinating, planning, and promoting of adequate community health services. Involves working with medical and health agencies and organizations and with committees. Beginning salary $3,000. Applications should indicate training and experience and references. **Box R,** Employment Service, A.P.H.A.

Sanitarian wanted: Starting salary $1,800 per year with travel allowance of $50 per month. Man must have own car. Bachelor's degree followed by at least one year's course or its equivalent in subjects necessary for one entering the public health field, or an engineering degree plus one year's experience in sanitary or public health engineering required. A course in public health training may be considered as an equivalent for a part of the experience requirement. Apply Dist. Dept. of Health No. 6, Central Office, Newberry, Mich., Dr. Franklin.

Wanted: Two physicians, immediate appointment, full-time venereal disease clinician, conduct several small clinics rotating schedule. Experience preferred. Salary $3,600 plus actual expense not to exceed $1,200. Write State Health Department, Santa Fe, New Mexico.

The Board of Health, Territory of Hawaii, announces applications will be received for positions as Medical Technician in their public health laboratories. The positions: Civil Service Classifications, SP-5, salary range $154.17 to $192.92 per month; SP-6, $172.50 to $217.50 per month, subject to retirement deductions under Hawaiian Civil Service System, plus graded bonus for the period of time such bonus remains in effect for Territorial Government employees.

Interested persons may make written application to Board of Health, Territory of Hawaii, P. O. Box 3378, Honolulu, T. H.

Wanted: Laboratory technician, tuberculosis hospital, 130–150 beds. Salary $175 per month and full maintenance. Opportunity to do research. Nice surroundings, good living quarters. Write Dr. Paul D. Crimm, Boehne Hospital, Evansville, Ind.

Physician—public health pediatrics. To assist director of maternal and child health in large California County Health Department. Major duties, conducting of infant and preschool health conferences and school examinations. Beginning salary $350 and travel allowance. California license required. Training and experience in pediatrics or public health or both. Immediately available. Address William C. Buss, M.D., Kern County Health Department, Bakersfield, Calif.

Wanted: A physician trained in tuberculosis to assume administrative control of the Bureau of Tuberculosis in an eastern city of 200,000 population. Salary $3,900–$4,500 plus cost of living adjustment. Address **Box B,** Employment Service, A.P.H.A.

FOR OTHER POSITIONS AVAILABLE WRITE EMPLOYMENT SERVICE, AMERICAN PUBLIC HEALTH ASSOCIATION, 1790 BROADWAY, NEW YORK 19, N. Y.

In view of the current active demand for trained and experienced persons in public health it is suggested that prospective employers communicate directly with the Employment Service, American Public Health Association, 1790 Broadway, New York, N. Y., for up-to-date lists of applicants.

POSITIONS WANTED

Physician, age 36, M.D., Iowa, Dr.P.H. Harvard, specializing in tuberculosis, seeks position as medical director of a sanatorium or a state bureau of tuberculosis. Exempt from military service. **A-476**

Physician, M.D. Yale, with private practice industrial medicine. Age 39 and draft exempt. Seeks opportunity as public health physician. **A-505**

Bacteriologist, 28, Iowa State College, draft immune, 3 years' experience public health laboratory. Experience in investigation and control activities on water, sewage and sanitation, as chemist and bacteriologist and serologist in syphilis and enteric diseases. **L-465**

Physician, M.D. University of Arkansas, M.P.H. Harvard, experienced as county health officer. Age 35. Will consider position as city or county health officer or director of a bureau. **A-506**

Woman physician, well prepared in pediatrics, M.S.P.H. DeLamar Institute, Columbia University, 1943, seeks employment in the field of maternal and child health, preferably administrative in pediatrics. Excellent references. **A-507**

NEWS FROM THE FIELD

HEALTH DEPARTMENT FUNCTIONS IN CIVILIAN PROTECTION

The Office of Civilian Defense has published an *Operations Letter No. 131* on the Health Department in Civilian Protection for distribution to state and local defense councils. At the request of George Baehr, M.D., Chief Medical Officer of the O.C.D., the letter is reprinted herewith.

Organization

Local—Regulations No. 3 of the Office of Civilian Defense provides that the Staff Unit of the U. S. Citizens Defense Corps "may include the Health Officer, who shall advise the Commander regarding emergency measures for disease prevention. He may be assisted by his deputies, division chiefs, and sanitary inspectors." (Section 16 (d) (11) of Office of Civilian Defense Regulations No. 3, amended to August 1942.)

Accordingly, it is recommended that each Commander of the U. S. Citizens Defense Corps, who has not already done so, appoint the local Health Officer as a member of his staff, in order that emergency health and sanitation activities may be properly coördinated with all protective services of the U. S. Citizens Defense Corps. A Health Officer serving as Chief of the Emergency Medical Service need not relinquish that position. He may assign deputies to act for and assist him in direction of the Emergency Medical Service or in supervision of emergency health and sanitation activities, or both.

State—The State Health Officer has important responsibilities defined by law. The State Defense Council should obtain his guidance and leadership in developing the civilian protection health and sanitation program throughout the State. In some States, agencies such as the departments of agriculture, labor, and welfare also may have legal responsibilities for certain matters affecting health. In these States it may be desirable to appoint a Health and Sanitation Committee, composed of representatives of all such agencies, to arrange, in accordance with existing State law, for the fullest utilization of personnel and facilities for the protection of health.

Duties

The Health Officer, as a member of the Staff of the Citizens Defense Corps, should develop plans for prompt and appropriate action during and after air raids or other disasters to assure:

1. Maintenance of safe water, food, and milk supplies.
2. Sanitary disposal of sewage and putrescible wastes.
3. Sanitation at mass feeding centers, rest centers, casualty stations, billets, and other temporary facilities for war emergencies.
4. Control of communicable disease.

Planning should include the mechanism for mobilizing essential personnel during and following an actual emergency, as well as arrangements for immediate instruction of the public in emergency sanitary measures in event of disaster. The Health Officer should review the plans and inspect the facilities of other services of the Citizens Defense Corps in order to eliminate potential health hazards.

Membership in the U. S. Citizens Defense Corps

The Health Officer, his deputies (including deputized volunteers), division chiefs, and sanitary inspectors are eligible for membership in the Staff Unit of the U. S. Citizens Defense Corps to facilitate performance of their duties in maintaining sanitation after an air raid or other wartime disaster. In some communities the health department may be inadequately staffed to provide sanitary supervision and inspection services in a war emergency. Under these circumstances, the Health Officer may select volunteer health deputies with experience or training in the fields of public health, sanitary engineering, bacteriology, chemistry, and related fields and may recommend their appointment in the Staff Unit of the Citizens Defense Corps. Deputies may be assigned by the Health Officer to supervise and inspect emergency activities and facilities, such as disinfection of fractured water mains, pasteurization of milk, and preparation and handling of food at emergency feeding centers. Health department officials and volunteers, in order to become members of the Staff Unit, must complete training in accordance with Regulations No. 3.

The Health Officer may prescribe additional technical training for those under him after their enrollment as members in the U. S. Citizens Defense Corps.

HOME CANNED FOODS AND BOTULISM

In view of the fact that the Association office has discovered much interest in thoroughly approved means for the prevention of botulism and with special reference to the current Victory Garden Program, the following bulletin of the California State Department of Public Health is published herewith, because it has the approval of those with wide experience in this field, including Dr. Karl F. Meyer, the Director of the George Williams Hooper Foundation of the University of California.

"Home-canned vegetables, fruits, fish, meats, and animal products can be eaten without danger of botulism—a highly fatal poisoning—if simple precautions are observed.

"1. Never eat home-canned vegetables, meat, or fish, even in tiny amounts, without first boiling the food for at least 15 minutes after removing it from the container. This must be done because it is not possible to tell that the food is capable of causing botulism by looking at it or smelling it. If the food is poisonous, even the tiniest amount may cause death.

"2. If in doubt about fruits, remove them from the container and boil them. The odors of decomposition will warn you.

"3. Never eat any canned food which shows mold growth or appears in any way to be abnormal such as having a bad odor or coming from a bulged container.

"4. Do not feed canned foods suspected of being spoiled to poultry, pets, or other animals.

"Botulism is caused by a poison, produced under certain conditions by the *Bacillus botulinus*. This *bacillus* is a spore which is present in the soil. It is transferred from the soil to food products. It is so small that it can be seen only with the aid of a microscope.

"Fortunately the poison is produced only by the germination of the *Bacillus botulinus* and the *bacillus* germinates only in the absence of air. For this reason, raw foods and cooked foods that have not been canned do not cause botulism. The airless interior of a sealed can or glass jar provides the ideal condition for the reproduction and growth of the *bacillus* and the consequent production of the poison.

"The spores of *Bacillus botulinus* can be destroyed by high temperatures. Botulism is prevented in canning by heating the food to a temperature above boiling. This temperature must be maintained for a sufficient length of time to permit the heat to penetrate to the very center of the contents of the can. The temperature which is necessary and the duration of the heating depend upon the density of the food and the rapidity with which the heat is conducted through the food and the container. The temperature and the heating time vary with different foods and different containers.

"Commercial canners in California are licensed by the State Board of Public Health and use methods prescribed by the Board. An inspector is present in the plant during the canning of any food capable of causing botulism.

"Housewives who own steam pressure cookers and who have the technical knowledge concerning proper temperatures, and the period of heating required for different foods and different containers, may use this method of canning with safety. The University of California, Berkeley, issues a very complete bulletin of instructions entitled Home Canning, Circular 276.

"Many people believe that botulism is only caused by eating home-canned string beans and olives. This is not true. Cases recorded by the California State Department of Public Health involve 32 kinds of foods, including 18 vegetables, six different meats and cheeses, three kinds of fish and five varieties of fruit.

Illness from botulism usually occurs from 24 to 48 hours after the food has been eaten. This is very different from ordinary food poisoning due to spoilage, which usually occurs from 2 to 4 hours after eating.

"The symptoms of botulism are also different from other food poisoning. They include muscular weakness, disturbances of vision, loss of ability to swallow and talk. The pulse is rapid and the temperature below normal. There is rarely any pain or symptoms of indigestion. Death is due to paralysis which makes breathing impossible. Call a doctor as soon as the first symptoms are noticed. Prompt medical care can sometimes save the life of the patient."

U. S. FEDERAL SUBSIDIES FOR NURSING EDUCATION PASSED

On June 15 it was announced that the Bolton bill to provide more nurses

for military and civilian war training service through subsidized training and the establishment of a uniformed nurse reserve had been signed by President Roosevelt. Representative Frances P. Bolton of Ohio who sponsored the bill indicated that the law would now provide for a student war nursing reserve which is expected to reach an enrollment of 65,000 by the end of June, 1944. Students will receive free tuition, maintenance, and uniforms, and from $15 to $30 a month from the Public Health Service. They must agree to serve either in the armed services or in emergency civilian jobs. Administration of the corps will be under the Surgeon General of the Public Health Service. Funds in the amount of $65,000,000 a year are expected to be devoted to implement the program.

HARD OF HEARING CHILDREN PROJECT APPROVED IN CALIFORNIA

It has been announced that Governor Warren has signed two bills passed by the recent Legislature making available to the State Department of Health $26,500 for the examination of children by trained otologists to detect hearing difficulties. Other funds were made available to the State Director of Education for consultant services in connection with the education of hard of hearing children in areas where these services are not otherwise available.

These bills were designed to make possible to children in small cities and rural districts the same services that are available to children who live in larger cities. The bills were sponsored by the California Committee for Hard of Hearing Children, of which Conrad G. Selvig of Santa Monica is Secretary.

NEW YORK STATE UNDERTAKES POSTWAR PLANNING PROGRAM

The New York State Legislature has established a Postwar Planning Commission which, in coöperation with the Division of Sanitation of the New York State Department of Health and the State Superintendent of Public Works, now has under consideration water supply and sewage disposal projects, and a variety of other structures, including municipal refuse incineration plants. More than 139 proposed sanitary projects are at the present time being considered.

A feature of the New York scheme includes an appropriation to assist municipalities, school districts, and district corporations in meeting the cost of the preparation of such plans. For all projects that it approves the commission is authorized to allocate an amount equivalent to one-half of one per cent of the cost of the project for the preparation of preliminary plans and, if these are approved, it may allocate an additional sum up to one and one-half per cent of the cost of the project as its share of the expenditure for final detailed plans.

JOHN M. DIVEN MEMORIAL MEDAL

Health News announces that Earl Devendorf, Assistant Director of the Division of Sanitation of the New York State Department of Health and State Water Coördinator of the New York State Mutual Aid Plan for Water Service, has been awarded the John M. Diven Memorial Medal by the Medal Committee of the American Water Works Association "in recognition of the most outstanding service to the American Water Works Association last year." The presentation was made on June 17 at a dinner meeting conducted in connection with the war conference of the Association in Cleveland, Ohio.

In making the award the committee pointed out that "Mr. Devendorf originated the mutual-aid program on a fully coöperative basis, bringing into the work a large number of members of the Association who are water works

executives in the state. Participating with these water works executives have been many engineers of the New York State Department of Health, who, to the degree that they have contributed to the Mutual Aid program, share in the honor conferred upon the recipient of this award. The development of the Mutual Aid program in the water works field has been a conspicuous activity in many states and is, in effect, the most outstanding service and advancement in the field of the year."

IDAHO PUBLIC HEALTH ASSOCIATION

The following new officers were elected by the Idaho Public Health Association at its June 3rd Annual Meeting:

President—W. V. Halversen, Ph.D., Moscow
Vice-Presidents—Stuart Robinson, Gooding
Mrs. H. J. Maughan, Preston
Mrs. Emma Clouchek, Twin Falls
H. B. Yearsley, Pocatello
Mrs. R. L. Brainard, Wardner
Secretary—H. C. Clare, Boise
Treasurer—Lucy M. Higgins, Boise
Representative on the A.P.H.A. Governing Council—L. J. Peterson, Boise

ARIZONA PUBLIC HEALTH ASSOCIATION

New officers of the Arizona Public Health Association were elected as follows at a recent meeting:

President—H. L. McMartin, M.D., Phoenix
President-elect—Mary E. Caldwell, Ph.D., Tucson
Vice-President representing Public Health Nursing Section—Hazel Kandler, R.N., Tucson
Vice-President representing Sanitarians—O. W. Fowler, Phoenix
Vice-President representing Clerks—Parma Branscomb, Phoenix
Vice-President representing Laboratory Section—Marion Stroud, Phoenix
Secretary-Treasurer—Fred M. Ashley, Phoenix

A.W.V.S. STARTS SAFETY PROGRAM

The American Women's Voluntary Services is extending its wartime activities to include a safety program to be known as the Safety Plan. Home safety and accident prevention are its objectives. The program will be conducted through the local units of the American Women's Voluntary Services in full coöperation with local safety organizations and other organizations that sponsor safety educational activities, such as the Parent-Teacher Associations, women's clubs, the boards of education, health departments, etc.

The members from the local units selected for this work are urged to take the Red Cross Home Safety Course and the program will be centered upon the types of accidents most common in the particular locality.

PUBLIC HEALTH ASSOCIATION OF NEW YORK CITY

The Seventh Annual Meeting of the Public Health Association of New York City was held at Hotel George Washington, New York, N. Y., May 12.

At the afternoon session the speaker was Elisabeth C. Phillips, R.N., Assistant Director of Field Practice, Henry Street Visiting Nurse Service. Her topic was "Great Britain in War Time."

At the dinner session the speaker of the evening was Professor Robert Hughes Parry, M.D., Medical Officer of Health of the City and Port of Bristol, England. Dr. Parry's topic was "Meeting the Wartime Health Problems of an English City."

The officers elected to serve until the Annual Meeting in 1944 were:

President: Leverett D. Bristol, M.D.
First Vice-President: Sol Pincus
Second Vice-President: Alfred E. Shipley, M.D.
Secretary-Treasurer: Frank Kiernan

Sol Pincus, Deputy Commissioner of Health of the City of New York, was continued as representative to the Governing Council of the American Public Health Association.

NUTRITION EXHIBIT OF CALIFORNIA ACADEMY OF SCIENCES

Robert C. Miller, the Director of the California Academy of Sciences, Golden Gate Park, San Francisco, has reported on the development of a nutrition exhibit built by the Academy partly from contributions made by the Northern California Public Health Association, and by the Western Branch of the American Public Health Association, which has been shown in Seattle, San Jose, Santa Barbara, Sacramento, Marysville and Palo Alto. Mr. Miller recently reported to Dr. Guy S. Millberry, Treasurer of the Western Branch A.P.H.A., that the contributions of $420 toward the construction of this exhibit had been used by the Academy to supplement its own investment and to make possible an exhibit at the Western Branch meeting in 1942. Since June, 1942, the expenses of transportation of this exhibit have been paid by the agencies borrowing it. When the exhibit was not enroute it has been displayed in the Museum of the Academy in Golden Gate Park. The exhibit since its completion has traveled over 3,000 miles and at a conservative estimate has been seen by 150,000 people. It is available for showing throughout the western states.

Ann Wilson Haynes, Secretary of the Northern California Public Health Association, has reported that the Association has made its contribution to this exhibit from funds rebated to the affiliated society by the American Public Health Association. It is suggested that other affiliated societies which make definitive use of rebate funds will make their experiences available to the professions through the columns of the *Journal*.

DENTAL TRAINING FOR MEDICAL STUDENTS IN NEBRASKA

A program has been inaugurated at the College of Medicine, University of Nebraska, to instruct medical students in aspects of dentistry from a public health standpoint. According to H. M. Wilbur, D.D.S., who is in charge, the fundamental aim is to help the medical student become aware of the dental problem and how this problem affects the practice of medicine. This program is carried out through the medium of lectures in which the student is presented with material to form a background for an understanding of the fundamentals of dental and oral pathology. This material is accompanied, expanded and fortified by opportunity for clinical observation in the dispensary and hospital.

The chief topic of discussion in the lectures is dental caries. Material is presented on dental anatomy, both gross and microscopic, tooth development, calcification and eruption, anomalies and deformities of the teeth, the clinical aspects of caries, factors influencing the localization of cavities, the epidemiology of caries, all as forming a background of the caries problem. A detailed discussion of the current theories of the etiology of caries is presented from a historical, experimental, and practical standpoint, and the details of the bacteriological examination of the patient's saliva as a diagnostic and prognostic procedure are included. The recent work on the influence of the association of fluorides in the drinking water on caries is discussed, together with other influences such as diet and nutrition, sunlight, and physical state.

The clinical exposure of the student is accomplished through assignments to the dental clinic in the dispensary where he observes examinations wherein the importance and significance of radiograms and bacteriological examinations are emphasized. He also observes routine dental procedures, such as prophylaxis, fillings, and extractions. An evaluation of the individual patient's dental status in the light of the medical

problem is made, both in the dispensary and in the hospital, so that the student may see the different aspects presented by ambulatory and hospitalized patients.

This program was made possible through the efforts of the Children's Bureau of the Department of Labor in coöperation with the Nebraska State Health Department. The dental director is a member of the Division of Maternal and Child Health of the State Health Department, which division is comprised of an obstetrician and gynecologist, a pediatrician, a nutritionist, a bio-chemist and a pediatric nurse. This unit works in close intercoöperation, and the dental program is integrated with it in problems of maternal and child health. The clinicians are all full-time members of the teaching staff of the College of Medicine.

MARYLAND STATE PLANNING COMMISSION COMMITTEE ON MEDICAL CARE REPORTS

The Maryland State Planning Commission, of which Abel Wolman, Dr.Eng., Professor of Sanitary Engineering at Johns Hopkins University, is Chairman, has recently published the report of the Committee on Medical Care.

Among the conclusions and recommendations it is pointed out that in certain sections of Maryland some essential medical services are not available to the medically indigent. There has been a growing tendency for these persons to request medical care from state and county health departments and corresponding departments of welfare. Diagnostic and other medical services have been provided in some fields of medicine, especially tuberculosis, venereal, and mental diseases, by the state and county departments of health. At present there is no state or local department or agency legally responsible for making these services available to the indigent, except in the limited fields of medicine with which state and county departments of health now concern themselves.

Among the recommendations it is proposed that a plan be adopted to provide medical care, including hospitalization, to the medically indigent, the program to be administered by the State Department of Health. The determination of the eligibility of applicants and the certification of them for care, as well as the payment of compensation to physicians and institutions, is to be a function of the state and county departments of welfare. It is proposed that the State Board of Health should establish a Council on Medical Care to formulate policies for the administration of the program. The Bureau of Medical Care should be established within the State Department of Health under a chief who should be a physician experienced in the field of medical care and appointed by the Director of the State Department of Health with the approval of the Council on Medical Care, serving on a full-time basis. The county health officer will administer the local program of the Council on Medical Care for the care of the medically indigent in homes, clinics and hospitals.

PROPOSED SOCIAL SECURITY ACT AMENDMENTS OF 1943

Senator Robert F. Wagner on June 3 introduced in the U. S. Senate the Wagner-Murray Bill, S-1161, which provides for a unified national social insurance system of new scope, consisting of a national system of public employment offices, old age and survivors' insurance, permanent disability insurance, lump sum death benefits, protection of the social security rights of men and women in military service, unemployment insurance, temporary disability insurance and maternity benefits, unemployment allowances upon

termination of military service, and medical and hospitalization insurance.

According to Senator Wagner the bill covers broadly the major economic hazards of average people throughout their lifetime—loss of income in time of unemployment, sickness, permanent disability, and old age. It assures medical care and hospital service for the American people "while protecting the free choice by the patient of doctor and hospital and the free choice of patient by the doctor and the hospital." It would increase the old age benefit allowances for workers and their families and extend coverage to 15,000,000 persons now excluded, such as farm workers and domestic servants, employees of non-profit institutions, and the independent farmer, professional and small business man.

According to Senator Wagner the bill would create a unified system of social insurance with one set of contributions, one set of records and reports, one set of local offices, making for a more efficient administration, reducing the number of reports and the cost to employers, and simplifying the entire program for workers, employers, and the public. The bill extends to all the members of the armed forces upon their return to civilian life all the phases of insurance protection, whether or not they were covered or had accumulated benefit rights in previous years. This includes a special unemployment allowance for 26 or possibly 52 weeks up to a maximum of $30 per week, depending on the size of the family.

Section 11 of the bill is concerned with medical care and hospital benefits and sets up a federal system of medical and hospital insurance for all persons covered under old age and survivors' insurance and for their dependents. Each insured worker and his dependent wife and children would be entitled to the services of a physician who was a general practitioner and, on the doctor's advice, to specialist, consultant, and laboratory services, including x-ray, appliances, eyeglasses, etc., and necessary hospital care. According to Senator Wagner "the bill contains various provisions to assure that medical benefits will be the highest quality that can be made generally available, will promote personal relations between doctor and patient, will emphasize prevention of disease, and will be adapted to the needs and practices of the community in both rural and urban areas."

The Surgeon General of the U. S. Public Health Service would administer the technical and professional aspects of the program, with financial and social insurance relationships to be the responsibility of the Social Security Board. Hospital care is limited to 30 days a year, with a possible maximum of 90 days. All qualified hospitals are eligible to participate and all illnesses are covered for hospital care except tuberculosis or mental disease. Insured medical care covers all necessary service, but limitations may be fixed later if necessary. Medicines required outside the hospital would not be provided, nor would dental care, home nursing, private hospital rooms, and certain other services. The Surgeon General is authorized and directed to administer grants-in-aid to non-profit institutions and agencies engaging in research or in undergraduate or post-graduate professional education. Such grants could be made for projects showing promise of making valuable contributions to the education and training of persons furnishing medical and hospital, disability, and related benefits, or of making valuable contribution to human knowledge with respect to the cause, prevention, or methods of diagnosis or treatment of disease or disability. The maximum sum available each year for such grants-

in-aid would be 1 per cent of the total expended for all benefits, exclusive of unemployment insurance benefits, or 2 per cent of the amount expended for medical care and hospitalization benefits, whichever is less.

LOCAL HEALTH SERVICE—A NEW APPROACH

"After a decade or two of slow going, the movement for full-time public health service has rolled up such momentum in recent years that it is no longer fantastic to plan definitely to extend it to the whole population of the United States. Last summer the American Public Health Association set up a Subcommittee on Local Health Units under the Chairmanship of Dr. Haven Emerson. This committee has recently reported that more than two-thirds of the population is already provided with full-time health service under city, county, or state auspices. There remain, however, more than forty million people without such service. In their interest the committee has begun a systematic mapping of the whole country to discover what additional facilities are needed and how they can best be disposed.

"The committee suggests that population units of 50,000 should be able to support a full-time health officer and an adequate health department staff, including an average of one nurse for each 5,000 persons. On this basis the country could be blanketed with approximately 1,100 units.

"This preliminary plan needs to be refined and adjusted to geographical details. The committee is in correspondence with state health officers to this end, and expects to employ a small research staff for which the Commonwealth Fund has made an appropriation. The upshot of this consideration should be a sound plan of campaign for the distribution of health service. The American Medical Association and the American Public Health Association have both given official approval to the extension of public health service and the time is ripe for orderly and more rapid progress.

"The Fund is also sharing with the American Public Health Association, through an April appropriation and staff collaboration, in the task of revising methods of evaluating current health performance. A scheme has been devised whereby current experience can be compiled and reduced to convenient statistical indices for the guidance of health officers who wish to gauge their local achievement in comparison with prevailing standards. This device, when it is in full operation, will carry forward the service performed hitherto by the older Appraisal Form for Local Health Work."—From *News Letter* of the Commonwealth Fund, June, 1943.

CALIFORNIA STATE FEDERATION OF LABOR REQUIRES BLOOD TESTS OF UNION MEMBERS

Lawrence Arnstein, the Executive Secretary of the California Social Hygiene Association, San Francisco, has pointed out that the Executive Board of the California State Federation of Labor in its session in Hollywood on June 12 recommended to its affiliates that member unions require each applicant for membership to have a blood test made before admission into the union, the result of the test to be a matter of strictest confidence between the examining physician and the applicant, and under no circumstances to be revealed to the union or to the employer, and to have no bearing upon the applicant's admission into the union. The board further recommended that unions make arrangements with local public health departments to make tests for applicants for membership who do not wish to go to a physician in

private practice. It was further recommended that assistance from the California State Department of Public Health and local public health departments and the California Social Hygiene Association be secured in conducting an educational program among the entire union membership.

Assisting Mr. Arnstein, among others, was Arthur Painter of the San Francisco Health Department who is assigned by the U. S. Public Health Service as educator.

SANITATION EXPERTS ON INTER-AMERICAN HIGHWAY

The press recently announced that a Commission of Sanitation Experts which is studying conditions along the route of the inter-American highway had arrived in Guatemala. Dr. John R. Murdock, chief of the mission, is accompanied by sanitary engineers Charles C. Spenser, Herbert E. Hargis, and Walter Dashiel. Special attention is being given to drinking water supplies, drainage and tropical diseases existing near the highway.

IMPROVEMENT IN THE TEACHING OF TROPICAL MEDICINE IN THE MEDICAL SCHOOLS OF THE UNITED STATES AND CANADA

The Association of American Medical Colleges is conducting a program to improve the teaching of tropical medicine in medical schools. The program was developed at the request of the Surgeons General of the Army and Navy and has the coöperation of the Division of Medical Sciences of the National Research Council, the Pan American Sanitary Bureau, the Office of the Coördinator of Inter-American Affairs, the United Fruit Company, the Army Medical School, Tulane University, and the U. S. Public Health Service. It is supported financially by the John and Mary R. Markle Foundation. The operation of the program is in the hands of a committee of the Association of American Medical Colleges consisting of Dr. Malcolm H. Soule, University of Michigan, Dr. Hiram W. Kostmayer, Tulane University, and Dr. Henry E. Meleney, New York University, Chairman.

The first phase of the program provided an opportunity for each medical school in the United States and Canada to send two members of its teaching staff to attend an 8 weeks' course in tropical medicine at the Army Medical School or Tulane. The first courses began January 4, 1943. By the end of August, 83 instructors from 59 schools will have taken advantage of this opportunity.

The second phase of the program consists of the distribution of teaching material to medical schools. The Army Medical School has established a Distributing Center for parasitological and pathological specimens. This center also gives advice as to sources of lantern slides and motion picture films. The Office of the Surgeon General has made available its epidemiological information concerning tropical diseases and medical services in tropical countries throughout the world. It has prepared maps showing the distribution of tropical diseases. This material is in process of publication through the coöperation of the National Research Council and the Markle Foundation and will be distributed to the medical schools and other interested agencies and individuals. The Office of the Surgeon General of the Army also has available a limited number of copies of *Circular Letter 33 SGO* entitled, "Treatment and Control of Certain Tropical Diseases," for the use of medical schools.

The third phase of the program consists of providing an opportunity to instructors from medical schools for a

month of practical experience in tropical medicine in Latin America, principally in the Central American countries. Two instructors from each medical school are offered this opportunity. Fifty-eight instructors from 43 schools have been accepted for this program. The first group of 8 individuals spent the month of June in Central America, and subsequent groups will go monthly until the program is completed. The program consists of 3 weeks' residence at a hospital of the United Fruit Company, followed by 1 week of observation of the program of the local field unit of the Office of the Coördinator of Inter-American Affairs in the respective Central American countries. It is possible that other such centers for practical experience may be utilized in the future.

MISS LUGINBUHL APPOINTED TO A.P.H.A. STAFF

Martha Luginbuhl began her work July 6 as research assistant to the Subcommittee on Local Health Units under the Committee on Administrative Practice in the headquarters office, 1790 Broadway, New York, N. Y. The subcommittee is under the Chairmanship of Haven Emerson, M.D., and is developing a plan for the extension of local health services to all parts of the United States, as outlined in the April issue of the *Journal*.

Miss Luginbuhl most recently has been statistical supervisor in the National Headquarters, U.S.O. She was a statistical assistant in connection with two studies of the Research Bureau of the Welfare Council, New York, N. Y., on a Health Inventory of New York and Chronic Illness in New York City. Formerly she was Director of Statistics, Records and Information in the United Hospital Fund of New York and was on the staff of the Public Health Relations Committee of the New York Academy of Medicine.

CLIFFORD W. BEERS DIES

Clifford Whittingham Beers, founder and secretary of the National Committee for Mental Hygiene and the American Foundation for Mental Hygiene, and a man internationally known in his field, died on July 9 in Providence, R. I., at the age of 67. Mr. Beers was best known for his autobiography *A Mind That Found Itself*, which was published in 1908, representing his own experience of a mental break. In 1908 he founded the Connecticut Society for Mental Hygiene, the first organization of its kind, which was followed by the establishment of similar organizations in about 25 states. The National Committee was founded in 1909.

Born in New Haven in 1876, Mr. Beers was graduated from Sheffield Scientific School, Yale University, in 1897. Yale conferred an honorary M.A. degree on him in 1922. At that time President Angell said that it "was for indomitable courage and devotion in turning to the enduring benefit of mankind experiences that have driven most sufferers to silence and seclusion."

Mr. Beers in 1928 founded the American Foundation for Mental Hygiene and was organizer and Secretary General of the First International Congress for Mental Hygiene, held in Washington in May, 1930. The second International Congress for Mental Hygiene in Paris in 1935 was also organized by him. In 1930 he had founded and become secretary of the International Committee for Mental Hygiene. The following year he established and became secretary of the International Foundation for Mental Hygiene.

While a student at Yale an older brother of Mr. Beers had been fatally stricken with epilepsy and fear that a similar fate awaited him was experienced with increasing force until he suffered a mental breakdown in 1900. An attempt to take his own life was followed by confinement in institutions

for the insane for three years. In spite of his surroundings his reason gradually returned and he resolved to do what he could to correct the evils of the age-old system of caring for the mentally ill. He even voluntarily provoked commitment to the violent ward of one hospital in order to gain first hand knowledge of the worst conditions that prevailed. After his release from confinement in 1903 he entered business life, but early decided to sacrifice his right to privacy as to his own experiences and, through the medium of a book, to lay bare to the world the abuses he had endured and to focus public attention on the problems of the care and treatment of that class of unfortunates in whose behalf he felt it his peculiar right and duty to speak.

DR. L. T. WEBSTER, EPIDEMIOLOGIST, DIES

Dr. Leslie T. Webster, a member of the Rockefeller Institute for Medical Research, who was known especially for his work in epidemiology, died in Scarsdale, N. Y., on July 12 of a stroke, at the age of 48.

Born in New York, Dr. Webster graduated from Johns Hopkins Medical School in 1919, following which he joined the staff of the Rockefeller Institute, becoming a member in 1934. Dr. Webster was largely responsible for the establishment in this country of the science of experimental epidemiology. He developed colonies of mice and other animals and watched the spread of communicable diseases through them. More recently he carried on extensive researches on rabies, devising tests for early diagnosis and for determining the potency of antirabic vaccines. Dr. Webster joined the American Public Health Association in 1935 and became a Fellow in 1940.

PERSONALS

Central States

M. BERNETA BLOCK, M.D., Director of the Alger-Schoolcraft Health Department, with headquarters in Manistique, Mich., has accepted a position as Director of the Maternal and Child Health Service of the Territory of Alaska, with headquarters in Juneau. Prior to her appointment in February as Acting Director of the Manistique health unit, Dr. Block had been Regional Consultant in Maternal and Child Health in Lansing.

G. HOWARD GOWEN, M.D., PH.D.,* formerly associated with the Chicago Department of Health and the University of Michigan School of Public Health, entered military service in July, 1942, and is now serving as Major in the Medical Corps with the First Medical Laboratory in North Africa.

FREDERICK C. HANEY, M.D., has been named Commissioner of Health of Watertown, Wisc., succeeding HARVEY G. E. MALLOW, M.D., who has been commissioned a First Lieutenant in the U. S. Army Air Force.

HUGO V. HULLERMAN, M.D., M.S. P.H.,* has resigned as Deputy Commissioner of Health in the Peoria, Ill., Department of Health to assume duties on July 1 as Chief of the Division of Maternal and Child Hygiene with the Illinois Department of Public Health in Springfield.

COLONEL EDGAR ERSKINE HUME, M.C., U.S.A.,* has been announced as Chief American Health Officer for The Allied Military Government of Occupied Territory, in the organization attached to the United States Seventh Army in Sicily. Dr. Hume was recently at the Winter General Hospital, Topeka, Kans.

PHILIP D. MCGINNIS, M.D., has been appointed Health Officer of Joliet, Ill.

REUBEN F. REIDER, M.D., D.P.H.,† Passed Assistant Surgeon, Reserve, serving in Illinois on loan from the

* Fellow A.P.H.A.
† Member A.P.H.A.

U. S. Public Health Service, is the Illinois District Health Superintendent for the Counties of Coles, DeWitt, Douglass, Edgar, Macon, McLean, Moultrie, and Platt, with headquarters in Decatur. Dr. Reider replaces WILMIER M. TALBERT, M.D.,† of Decatur, who has been granted a military leave from state service to enter the U. S. Navy.

FRED O. TONNEY, M.D.,† formerly of the Chicago Health Department and more recently of the Delta County Health Unit, Escanaba, Mich., has been appointed Health Director and Research Consultant to the Toledo Scale Company, at Toledo, Ohio, under a research grant from the Company to the Toledo Health Department.

JOSEPH D. WARRICK, M.D., has been appointed Health Officer of Sharon, Wisc., to succeed L. C. Kief.

EARL M. WATSON, M.D., Health Officer of Cass County, N. D., has been appointed Health Officer of Fargo, succeeding ELVIN L. SEDERLIN, M.D.,† who resigned recently to become Regional Health Officer of Valley City.

Eastern States

JAY I. BOXER, M.A., began work on July 1 as a member of the community health education staff of the Onondaga Health Association in Syracuse, N. Y. Mr. Boxer has served for the last 6 years as social investigator in the Welfare Department of Suffolk County, New York. The association's program covers tuberculosis, social hygiene, and several other sectors of the health field.

LEVERETT D. BRISTOL, M.D., DR.P.H.,* of Montclair, N. J., has been named to succeed J. LYNN MAHAFFEY, M.D.,† of Camden, as State Director of Health of New Jersey, for a term of 4 years. Dr. Bristol is Health Director of the American Telephone and Telegraph Company, in New York, N. Y.

MATTHEW A. BYRNE has been appointed Secretary of the New York City Department of Health, to succeed FRANK A. CALDERONE, M.D., M.P.H.,* who recently was appointed Deputy Health Commissioner. The appointment was made on the 40th anniversary of Mr. Byrne's service in the Department. In his new position he will supervise the administrative activities of the department and will continue as a member of the personnel board.

WALTER CLARKE, M.D.,† Executive Director of the American Social Hygiene Association, New York, N. Y., has been appointed Clinical Professor of Public Health Practice at Harvard University, Cambridge, Mass. For the past 3 years, Dr. Clarke has served as a Lecturer, in the Harvard School of Public Health, on public health administrative practice as applied to the control of syphilis and gonorrhea.

ALFRED L. FRECHETTE, M.D., M.P.H.,† Secretary of the New Hampshire State Board of Health, Concord, has been called to active duty with the U. S. Public Health Service for duties in North Africa. MARY M. ATCHISON, M.D., M.P.H.,† Director of Divisions in the State Board of Health, has been appointed Acting Deputy Secretary.

MIRIAM R. HAHN, M.P.H.,† of Hamden, Conn., who completed her course at Yale in 1943, has been appointed Director of Health Education in the Kern County Department of Health, Bakersfield, Calif.

CHARLES S. MCKINLEY, M.D., of Scotch Plains, N. J., has been appointed Director of the Bureau of Industrial Hygiene in the West Virginia State Department of Health,

* Fellow A.P.H.A.
† Member A.P.H.A.

on the recommendation of the U. S. Public Health Service. He succeeds JOHN W. CROSSON, M.D., who recently resigned to become Industrial Consultant for Sharp & Dohme, of Philadelphia, Pa.

RICHARD NAUEN, M.D.,† recently of Ray Brook, N. Y., has been appointed Tuberculosis Control Director in the Cattaraugus County Department of Health, Olean, N. Y.; and in charge of the Rocky Crest Sanatorium, succeeding E. K. RICHARD, M.D., who has resigned to enter private practice.

DR. ELMER H. STOTZ, Director of the Chemical Laboratory at McLean Hospital, Waverly, Mass., and a member of the teaching staff in biochemistry of the Harvard Medical School, according to *Science*, has been appointed by the Board of Trustees of Cornell University as Professor of Agriculture and Biochemistry and Head of the Division of Chemistry at the New York State Experiment Station at Geneva, N. Y. The appointment becomes effective on August 1. Dr. Stotz succeeds DR. DONALD K. TRESSLER,* who resigned early in the year to enter the industrial field.

HAROLD C. STUART, M.D.,* Assistant Professor of Pediatrics and Child Hygiene of the Harvard Medical School and the Harvard School of Public Health, Boston, Mass., has been interned with other Red Cross personnel and diplomats and was recently at Baden Baden, Germany. Dr. Stuart went to Europe for the American Red Cross to serve as medical director of relief activities in unoccupied France and Switzerland. He was in Marseilles ready to leave for the United States in November, 1942, when the African campaign began and has since been interned.

* Fellow A.P.H.A.
† Member A.P.H.A.

THOMAS M. THOMPSON, M.D., M.P.H., of Philipsburg, Pa., District Medical Officer for District No. 9, consisting of Clearfield, Clinton, and Centre Counties, has been transferred to District No. 4, composed of Bucks and Montgomery Counties, with headquarters in Norristown. GEORGE R. GOOD, M.D., of Altoona, District Medical Officer for District No. 10, including Huntingdon, Blair, and Cambria Counties, will have temporary charge of District No. 9. Dr. Thompson succeeds the late HOWARD W. HASSELL, M.D., of Bridgeport.

Southern States

MINYARD D. INGRAM, M.D.,† of Dresden, Tenn., Health Officer of Weakley County for 14 years, has resigned to accept a similar position in Gibson County.

FRANCES C. MONTGOMERY, R.N.,* who since 1936 has been Director of the School of Public Health Nursing in the College of William and Mary, Richmond, Va., has resigned and will make her home in Florence, Colo. Previous to her service in Virginia, Miss Montgomery was Director of the Bureau of Public Health Nursing in the Alabama State Department of Health, Montgomery.

ROSCOE ROY SPENCER, M.D., Medical Director, U. S. Public Health Service, who recently has been serving as Assistant Chief of the National Cancer Institute, Bethesda, Md., according to announcements, has been appointed Chief of the Institute effective August 1. Dr. Spencer will succeed DR. CARL VOEGTLIN, who is retiring.

BRIGADIER GENERAL JAMES STEVENS SIMMONS,† A.U.S., Director of the Preventive Medicine Division, Office of the Surgeon General, U. S. Army, has recently received the honorary degree of Doctor of Science from

Duke University, Richmond, Va., at its commencement exercises.

Western States

E. L. BERRY, M.D., M.S.P.H.,† Director of the Idaho State Department of Public Health since February, 1940, has been appointed Superintendent of the State Hospital North, at Orofino, Ida., effective June 1. Dr. Berry will continue to serve as Director until a successor is appointed.

EARL H. COLEMAN, M.D.,† has been appointed City Health Officer of Fresno, Calif., to succeed the late CARLETON MATHEWSON, M.D. Dr. Coleman will serve on a part-time basis.

CONCESSA L. CRAVIOTTO, M.D., has been appointed Health Officer of Oroville, Calif., succeeding CHARLES BENNINGER, JR., M.D.

DONALD G. EVANS, M.D., DR.P.H.,* State Health Officer of Washington, has resigned to enter the private practice of pediatrics in Seattle, effective June 1. Dr. Evans is succeeded by LELAND E. POWERS, M.D., M.S.P.H.,† Health Officer, Tacoma, Wash.

C. R. FARGHER, M.D., M.P.H.,* Health Officer of Vancouver, Wash., has resigned and has been appointed Health Officer of Tacoma, succeeding LELAND E. POWERS, M.D., M.S.P.H.,† who becomes Washington State Health Officer.

JAMES L. FAULKNER, M.D., has replaced RUSSELL G. FREY, M.D., as Health Officer of Red Bluff, Calif.

DEAN ELDON HART, M.D., of Oakland, Calif., was appointed Health Officer of Emeryville, Calif., succeeding CHARLES NEWELL MELL, M.D., of Oakland.

DR. RALPH R. PARKER, Director of the Rocky Mountain Laboratory of the U. S. Public Health Service, Missoula, Mont., has recently had the Doctorate of Laws conferred upon him by the Massachusetts State College, Amherst, Mass.

CURTIS W. WILDER, M.D., of Lewistown, Mont., has been named Health Officer of Fergus County, to succeed the late CHARLES C. WALLIN, M.D., of Lewistown. Dr. Wallin held simultaneously the position of County Health Officer and Lewistown City Health Officer and full-time School Physician. The two latter posts had not been filled at the time of this report.

Puerto Rico

GUILLERMO ARBONA, M.D., M.P.H.,* formerly in charge of the training of staff at the Rio Piedras Unit of the Puerto Rico Department of Public Health, was appointed in April head of the Department of Public Health in the School of Tropical Medicine at San Juan, which is operated coöperatively with Columbia University, New York, N. Y. Dr. Arbona is Secretary of the Puerto Rico Public Health Association.

Deaths

CLIFFORD WHITTINGHAM BEERS, founder and Secretary of the National Committee for Mental Hygiene and the American Foundation for Mental Hygiene, New York, N. Y., died on July 9, in Providence, R. I., at the age of 67.

GILBERT T. CREECH, D.V.M., since 1912 Veterinary Pathologist in the Division of Pathology of the U. S. Department of Agriculture, Washington, D. C., died on June 2, at the age of 63.

DR. HARRY B. MELLER, formerly Chief of the Pittsburgh Bureau of Smoke Regulation, 1920 to 1938, and Managing Director of the Mellon Institute Industrial Hygiene Founda-

* Fellow A.P.H.A.
† Member A.P.H.A.

tion, Pittsburgh, Pa., from its organization to his resignation in September, 1942, died June 27, 1943, at the age of 65. Dr. Meller joined the Association in 1930 and was a member of the Engineering Section.

LESLIE T. WEBSTER, M.D.,* of The Rockefeller Institute for Medical Research, New York, N. Y., died July 12, at his home in Scarsdale, N. Y., at the age of 48.

CONFERENCES AND DATES

American Congress of Physical Therapy—22nd Annual Scientific and Clinical Session. Palmer House, Chicago, Ill. September 8–11.

American Public Health Association—Wartime Public Health Conference and 72nd Annual Business Meeting. New York, N. Y. October 12–14.

American Public Works Association. Chicago, Ill. October 24–27.

American Society of Heating and Ventilating Engineers—50th Anniversary Meeting. New York, N. Y. January 31, February 1, 2, 1944.

American Water Works Association—
Rocky Mountain Section—Denver, Colo. September 16–17.
Western Pennsylvania Section—Roosevelt Hotel, Pittsburgh, Pa. September 22–23.
Southwest Section—Hotel Biltmore, Oklahoma City, Okla. October 11–13.
Wisconsin Section—Plankinton Hotel, Milwaukee, Wis. October 19–21.
California Section—Biltmore Hotel, Los Angeles, Calif. October 27–29.

Federation of Sewage Works Associations—2nd Conference on Wartime Sanitation and 4th Annual Business Meeting. Chicago, Ill. October 21–23.

First National Congress of Public Welfare. Mexico City, Mexico. August 15–22.

FREE TECHNICAL BULLETINS

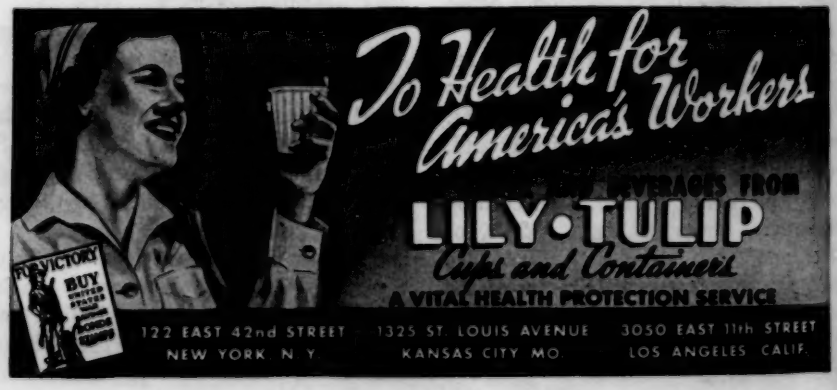
Compiled by the
DIVERSEY RESEARCH LABORATORIES

MODERN TRENDS IN DAIRY SANITATION

SUMMARY OF CONTENTS

Cleaning, the foundation of sanitation . . . how modern cleaners through superior wetting and water softening action improve sanitation . . . new developments in bottle washing . . . six reasons why scale is objectionable in bottle washing machines . . . how to remove scale safely . . . how to keep scale off the machine . . . five-point check list for evaluating the merit of a chlorine disinfectant . . . how newly developed test reveals the comparative penetrating power of chlorine disinfectants . . . future trends in dairy sanitation.

Diversey Technical Bulletins have been prepared in the interest of better sanitation in the nation's dairy, beverage, and other food plants. Copies are available without cost or obligation. Simply address your request to The Diversey Corporation, 53 W. Jackson Blvd., Chicago, Ill.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